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ABSTRACT

This final report describes a project at the University of Connecticut-Storrs, begun in 1993, to create a 5-year interdisciplinary, undergraduate, double-degree program, combining a bachelor of science in engineering with a bachelor of arts in German. The program, called Eurotech, is intended to provide students with practical, integrated foreign language study that not only links academic training and industry experience but also links technical preparation with experiential learning. The report notes that 3 years into the program, a foundation has been created for a learner-centered curriculum that stresses experiential learning and links academic training with industry experience. Evaluations include collecting information on students enrolled, finding out how much they are achieving, and assessing the program itself. Linguistic and professional preparation are supported by a variety of activities that promote cross-cultural awareness. Report sections include a project overview; purpose; background and origins; project description (instruction; promotion/recruitment; collaboration with industry); evaluation and project results; and summary and conclusions. Extensive appendices include samples of technical content in German, samples of activities in computerized modules; cultural questionnaire, syllabi, journal articles, brochures, resource lists, and evaluation forms. (CH)

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UNIVERSITY OF CONNECTICUT

FINAL REPORT
1993-1996

submitted to the
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HE 030 847

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SUMMARY

In the fall of 1993 the University of Connecticut started an undergraduate double-degree program combining a B.S. in engineering with a B.A. in German. Although the five-year program is open to any qualified engineering student, the focus is on those disciplines within engineering of particular relevance to the environment.

Based on the lessons learned from other international engineering programs, the EUROTECH program consistently links the two majors, German and Engineering, at all levels of instruction. EUROTECH is designed to introduce German-speaking engineering faculty into language instruction from the very beginning. It also offers specially designed language classes where EUROTECH participants learn more about engineering from German engineering students and German engineers/scientists from Connecticut industry. EUROTECH provides further linkage between engineering and German through summer internships with German companies in Connecticut. These six- to eight-week internships represent a "Grundpraktikum" preparing our students for their six-month internship in Germany during their fifth and final year.

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EXECUTIVE SUMMARY
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A. Project Overview

The EUROTECH program was conceived as a response both to students' wishes and to the needs of the U.S. economy for better educated, internationally competent professionals.

We wanted to provide students at the University of Connecticut with practical, integrated foreign language study that would link academic training with industry experience, and technical preparation with experiential learning. The state of Connecticut has a very high number of foreign companies, almost one hundred of which are German, and there are, of course, several U.S. firms here with strong international connections. Understandably, there is a demand for professionals with cross-cultural awareness, foreign language skills, and overseas work experience.

In 1993 the University of Connecticut requested funds from FIPSE to establish an international engineering program comprising:

1. Study toward two degrees: B.S. in engineering and B.A. in German
2. A six-month internship in Germany is included in the five-year program

We developed special EUROTECH tracks of first- and second-year German instruction with topics and activities of interest to engineering students. To strengthen the linkage between the two majors, on the intermediate and advanced levels, we designed three new German 1-credit courses with technical lectures by German-speaking engineers and scientists. Engineering faculty participating in EUROTECH had classes to maintain and improve their German and could participate in intensive language courses at the Goethe Institute in Germany.

Our focus on experiential learning convinced us of the need for summer internships with Connecticut industry. EUROTECH participants should, we believe, acquire some valuable industry practice before embarking on their six-month internship abroad. The idea of such a *Grundpraktikum* (carried out over two summers) preceding the work assignment overseas arose as the project directors talked to dozens of German CEOs about Germany's dual educational system.

In our program, students are expected to reach the level of "advanced" on the ACTFL scale before they can work abroad. But adequate linguistic and professional preparation are not the only conditions for a successful internship. The EUROTECH program has attempted to offer a variety of activities promoting cross-cultural awareness. An important part of our agenda on "cultural proficiency" is a pre-internship workshop that brings together EUROTECH students, German engineering students, German engineers, and experts on cross-cultural issues. Such workshops are intended to help students adjust to life and work abroad as well as to promote good communication between the American student and his/her German employers.

B. Purpose

The initiators of EUROTECH believe that education should bear in mind the needs of an increasingly global market when evaluating curricula. Leaders in business and government in the U.S. as well as abroad want a more linguistically competent and more culturally proficient America. They want to see universities do a better job equipping students with qualities necessary at the workplace. EUROTECH has established close collaborative links with industry in order to implement a curricular project that transfers some of the highly successful aspects of the German "dual" system to Connecticut.

To help our students acquire an attitude appropriate to industry as well as communicative skills and problem-solving techniques, the EUROTECH program focuses on competence in engineering, foreign language (including technical language), and culture. Students acquire competence in these three areas not only cognitively but also experientially. The usual training in labs and through co-ops reinforces, of course, existing theoretical knowledge. In the EUROTECH program, however, the experiential component goes beyond the conventional curriculum, as our students are gradually integrated into the international workplace. Our integrative approach helps our students become self-reliant as they develop various competencies in order to deal creatively with situations that rarely are identical with classroom rehearsals.

C. Background and Origin

Before EUROTECH was launched, the German Section of the Dept. of Modern and Classical Languages had already prepared the ground.

a) The undergraduate curriculum in German had been redesigned to accommodate nontraditional majors by including special-purpose language courses and interdisciplinary topic courses.

b) German faculty had investigated German instruction for special purposes and the ways technology can be integrated into the classroom to serve more diverse students more effectively. In 1992 the American Council on Education selected UConn's "German in Context" proposal for support and asked the University of Rhode Island to mentor our efforts. Prof. Kecht, who was to co-direct EUROTECH, had already successfully directed the "German in Context" project and become familiar with central issues of Languages Across the Curriculum (L.A.C.).

In the School of Engineering, many components that made our project feasible and timely were already in place.

a) The dean was very supportive of our efforts and encouraged Prof. Long and Prof. Kecht to establish a collaborative undergraduate curriculum.

b) Several departments of Engineering already offered courses in environmental engineering, EUROTECH's thematic emphasis.

c) Several engineering professors fluent in German were eager to help teach the 1-credit EUROTECH modules and contribute to other aspects of the program.

The feasibility of the proposed EUROTECH Program has to be seen in a context larger than the university, however. More than a hundred German companies are located in Connecticut. Indeed, of all the fifty states, Connecticut has the highest concentration of such companies and the largest proportion of its commerce dependent upon international trade.

D. Project Description

Instruction:

a) We developed special EUROTECH tracks of first- and second-year German instruction with topics and activities of interest to engineering students.

b) We designed three new German 1-credit courses with technical lectures by German-speaking engineers and scientists. The module series is an indispensable component of the EUROTECH dual major because its courses fully integrate German and engineering: German 220, Recitation in Applied Mechanics; German 221, Introduction to the Sciences; German 222, Fields of Technology. The pedagogy in this series is shaped by the content-based nature of the courses. The instruction is a team-effort (German instructor, German native-speakers TAs trained in the sciences, guest lecturers).

c) The communicative-oriented instruction is supplemented by increasing technology-mediated activities. Interactive computerized modules on engineering/science topics have been developed.

d) Field trips to industry and study trips to Germany during spring break are part of the instructional offerings.

e) EUROTECH requires regular oral proficiency testing and two Goethe examinations.

Promotion and Recruitment:

a) The EUROTECH promotional materials consist right now of two brochures, a bi-annual newsletter, and a homepage on the internet. The electronic posting of information about the program, its faculty, its student participants, its industrial support, etc. is becoming a very significant recruitment tool.

b) Various extra-curricular activities offered by the German Section of the Dept.of Modern and Classical Languages are designed to foster group spirit among EUROTECH participants.

c) To increase enrollments, flexible course schedules have been worked out, making it possible for engineering sophomores and even juniors to join EUROTECH.

d) Conference presentations, scholarly publications, and involvement in the national consortium for Languages Across the Curriculum have contributed to increased visibility of EUROTECH.

Collaboration with Industry:

As soon as EUROTECH was launched in 1993, an external advisory board was formed from industry and governmental agencies to guide the development of the scholastic and industrial components. The industrial members of the board consist of representatives from companies founded in both Germany and the USA. The board meets twice a year. The companies represented on the board provide German-speaking engineers to lecture in our module series, summer internships for the students in the U.S., and contacts for German internships. Some have contributed to student scholarships and the operating budget.

The quality of student internships is evaluated through student self-reports and their supervisors' detailed assessment. Such information is critical for the internship placement overseas. Almost thirty German companies that the EUROTECH co-directors have visited are potential providers of industrial *Praktika*.

E. Evaluation/Project Results

There are three categories of evaluation: 1) collecting data on the students in EUROTECH, 2) finding out how much they are achieving (linguistic, cultural, and technical competence), and 3) assessing the program itself.

We have looked at data on students' academic performance (in their German and engineering classes), students' language proficiency (cf. accredited Goethe Institute exams, OPI testing), their professional performance (cf. supervisors' reports and self-reports), their attitudinal changes with regard to cross-cultural awareness (cf. questionnaires, internship journals), and their satisfaction with the program structure. Students' placements with German companies, their performance there, and their linguistic and engineering abilities upon their return will yield new data for a systematic evaluation. The capstone project in the student's last semester, synthesizing their technical training, work experience, and language proficiency, will allow yet another kind of evaluation. Students' career placements upon graduation and their career paths will be an important factor in assessing the success of the EUROTECH program.

The most recent external evaluation has shown that EUROTECH has achieved a good deal of success in a relatively short time. The quality of instruction and faculty responsiveness to student concerns have been praised. The report has also pointed out the challenge of recruiting top students who can cope with the workload of the dual-degree program.

F. Summary and Conclusion

Three years into the EUROTECH program, we think we have managed to establish the foundation of a learner-centered curriculum that stresses experiential learning and links academe with industry as much as the U.S. educational system allows. Student recruitment requires constant attention and lots of initiatives, and fundraising also requires an inordinate amount of labor.

For anyone interested in establishing any kind of inter-disciplinary degree program like EUROTECH, it is important to stress that beyond a good institutional and regional infrastructure, you need faculty, teaching assistants, and staff who are willing to work beyond the call of duty. Furthermore, success of such a project largely depends on the kind of moral *and* financial support principal investigators receive from their deans and provosts/presidents. Unless there is demonstrated recognition (through the university's merit/promotion system) of curricular innovation, creative pedagogy, and intensive outreach work, it may be unwise to start a program like EUROTECH.

FINAL REPORT on EUROTECH
(1993-1996)

A. PROJECT OVERVIEW

The EUROTECH program was conceived as a response both to students' wishes and to the needs of the U.S. economy for better educated, internationally competent professionals.

We wanted to provide students at the University of Connecticut with practical, integrated foreign language study that would link academic training with industry experience, and technical preparation with experiential learning. The state of Connecticut has a very high number of foreign companies, almost one hundred of which are German, and there are, of course, several U.S. firms here with strong international connections. Understandably, there is a demand for professionals with cross-cultural awareness, foreign language skills, and overseas work experience.

In 1993 the University of Connecticut requested funds from FIPSE to establish an international engineering program comprising:

1. Study toward two degrees: B.S. in engineering and B.A. in German
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We developed special EUROTECH tracks of first- and second- year German instruction with topics and activities of interest to engineering students. To strengthen the linkage between the two majors, on the intermediate and advanced levels, we designed three new German 1-credit courses with technical lectures by German-speaking engineers and scientists. Engineering faculty participating in EUROTECH had classes to maintain and improve their German and could participate in intensive language courses at the Goethe Institute in Germany.

Our focus on experiential learning convinced us of the need for summer internships with Connecticut industry. EUROTECH participants should, we believe, acquire some valuable industry practice before embarking on their six-month internship abroad. The idea of such a *Grundpraktikum* (carried out over two summers) preceding the work assignment overseas arose as the project directors talked to dozens of German CEOs about Germany's dual educational system.

In our program, students are expected to reach the level of "advanced" on the ACTFL scale before they can work abroad. But adequate linguistic and professional preparation are not the only conditions for a successful internship. The EUROTECH program has attempted to offer a variety of activities promoting cross-cultural awareness. An important part of our agenda on "cultural proficiency" is a pre-internship workshop that brings together EUROTECH students, German engineering students, German engineers, and experts on cross-cultural issues. Such workshops are intended to help students adjust to life and work abroad as well as to promote good communication between the American student and his/her German employers.

When setting up the EUROTECH program, we decided to award six credits in German for a variety of assignments during the internship, because a) the School of Engineering does not give any academic credit for industry internships and b) students will most likely make enormous progress in German once they experience linguistic and cultural immersion. The six credits are an integral part of the EUROTECH German major.

The internship is the centerpiece of the EUROTECH Program, whose success depends on quality work experience. Our first group of students will be ready for their overseas assignment in 1997/98. The following steps have been or will be taken to ensure that the internship will be appropriate for seniors:

a) The program's co-directors have visited all the companies that are willing to accept our students as interns. Through further phone conversations and written follow-ups, the actual work assignments will be settled before the students are sent abroad. The co-directors will ask for a written description from each company of the student's responsibilities.

b) The student will be required to discuss the work assignment with the supervisor during the first day at the company and fax a description of these duties to the co-directors of EUROTECH. A few weeks later, the co-directors will telephone each student to assure that the assignment actually is as promised.

c) Each student will be required to keep a daily journal, in German, of the activities on and off the job as they apply to the learning process both in the technical area and in the improvement of the language. Students will receive particular investigative questions, which they are expected to address in their journals (and/or submitted tapes with interviews). For example: Find out how apprenticeship programs work in Germany. What is the cooperation between management and unions like? (Because of such tasks, Eurotech interns ought to have great motivation to communicate with German apprentices, workers, managers, etc.)

The journal will be sent to the directors monthly so that we can check the quality. The journal will also be used to evaluate the German credit portion of the internship.

d) The co-directors of EUROTECH will require each returning student to complete a questionnaire about her/his internship experience and will interview each student to eliminate difficulties in the program and constantly improve it.

e) Just as with summer internships, each company in Germany will be asked to evaluate their interns. With the information obtained from this questionnaire, the co-directors of EUROTECH will make adjustments to the program.

When EUROTECH students return from their internships in Germany, they will still have to work on a thesis. The students will be expected to draw on their overseas experience and integrate environmental concerns into the capstone design projects, and then present these projects in German to an audience including German engineers from industry.

The multiple organizational tasks of the program's co-directors include building links to companies in the region. Close collaboration with industry seemed particularly important to the staff of EUROTECH since increased accountability of the instructional program would benefit from an on-going external "real life" evaluation. In 1993 an industrial advisory board was established, and since its foundation, the board has met twice annually to address all kinds of issues, ranging from industry contributions to EUROTECH classes, publicity, student recruitment, and internships. Active and supportive board members certainly make a difference. At the same time, it is quite a challenge to sustain the interest of busy CEOs and persuade them of the need to support the program financially. Industry certainly wants culturally proficient engineers versed in German, but there may be too strong an expectation that universities should provide such a "quality product" without much further (financial) ado.

It is premature to claim that EUROTECH provides the kind of "quality product" business and industry are expecting. In less than two years our first graduates will look for jobs, and their placement (and their salaries) will be a realistic indicator of the success of the program. Judging by industry responses to EUROTECH students who have successfully completed summer internships with Connecticut companies, we can be confident that we will place our graduates well. In fact, two students, currently enrolled at German universities, have, through their excellent performance, already established very close ties with German firms in Connecticut and may have offers in hand before they even graduate in 1998.

B. PURPOSE

Since Profs. Kecht and Strack have discussed the "problem" EUROTECH addresses in a recent article, it seems appropriate to insert a few paragraphs from that article, which is included in Appendix A.

"The *New York Times* of February 20, 1995 offered its readers an article entitled 'Employers Wary of School System.' This article was both shocking and highly informative for educators. According to a recent survey of American business, the article stated, 'employers say one-fifth of American workers are not fully proficient in their jobs, and they express a lack of confidence in the abilities of schools and colleges to prepare young people for the workplace. . . . Most alarming to researchers was the skepticism that employers expressed about young, new workers.' As it turns out, the reputation of the applicant's college or academic performance, or teacher recommendations are worth very little; the qualities that count most to employers hiring young employees are attitude, communication skills, and previous work experience.

Of course not only American business seeks employees fitting its expectations of a productive, efficient, and self-reliant work force; foreign companies operating in the US do, too. . . . In Germany, to quote from the article in the *New York Times*, 'employers and schools have common goals and strategies,' whereas in the US, employers are 'wary of the school system.' . . .

[Through the EUROTECH advisory board] Connecticut industry has made a commitment to an educational experiment. [Therefore] the university has been able to create a program that infuses the traditional curriculum with the technical and social reality of the international workplace. The members of the EUROTECH advisory board, in close cooperation with the EUROTECH teaching staff, offer our engineering students the opportunity to learn how to function in such a challenging environment and develop the desired communicative skills and problem-solving techniques. The program encourages individual initiative, self-reliance, and the ability to work in a team--the basis of what the EUROTECH advisory board considers an attitude appropriate to industry. Communicative skills are equally important, necessary as they are for successful dissemination of information, and the articulation and the discussion of ideas. The study of foreign languages not only facilitates international communication and exchange of technical know-how, but it also encourages the learners to reexamine cultural traditions and personal views. Students become aware how important language is and how it defines their workplace, enhancing or obstructing team efforts. Industry also requires of EUROTECH graduates ample work experience, both in the US and in Germany. The program therefore includes regular summer internships with Connecticut companies and a six-month internship with a company in Germany. These internships familiarize our students with the German work culture and improve their language skills.

To help our students acquire an attitude appropriate to industry as well as communicative skills and problem-solving techniques, the EUROTECH program focuses on competence in engineering, foreign language (including technical language), and culture. Students acquire competence in these three areas not only cognitively but also experientially. The usual training in labs and through co-ops reinforces, of course, existing theoretical knowledge. In the EUROTECH program, however, the experiential component goes beyond the conventional curriculum, as our students are gradually integrated into the international workplace. Our integrative approach helps our students become self-reliant as they develop various competencies in order to deal creatively with situations that rarely are identical with classroom rehearsals."

The initiators of EUROTECH believe that education should bear in mind the needs of an increasingly global market when evaluating its curriculum. Leaders in business and government in the U.S. as well as abroad want a more linguistically competent and more culturally proficient America. The efforts needed to make headway are enormous, and the members of the EUROTECH staff are aware of the obstacles. Nevertheless, every worthwhile contribution, like the EUROTECH program, may help to ameliorate the situation.

"Critical to the success of EUROTECH and any similar educational experiment," to quote again from the above-mentioned article by Kecht and Strack, "is the productive collaboration between the university and business--an enterprise that is inevitably labor-intensive, time-consuming, but also stimulating and enlightening. Unless faculty members and administrators are willing to reevaluate their curricula, modify their course offerings and graduation requirements, change some of their teaching methods, and institutionalize new programs, it is unlikely that employers will stop being wary of the educational system. All parties involved in EUROTECH have a great deal to gain: the students receive a pragmatic international education preparing them for the global economy of the 21st century; American business can hire young engineers who draw upon solid academic as well as practical training, and who bring communicative abilities, foreign language skills, and intercultural awareness to the workplace; and the university--at the levels of both instruction and administration--benefits from the active support of industry that translates into better quality education, increased funds, improved public relations, and more international connections."

Even though the verdict is still out because we have not yet gone through one full cycle of the EUROTECH program, we think that the efforts to introduce some key elements of the German dual education system (on a small scale) have been worthwhile. Students enrolled in EUROTECH have responded very favorably to the program; industry has been very happy with our students as summer interns; and the university has (so far) shown commitment to the program beyond the federal grant. It should be stressed, though--and perhaps regarded as a warning--that the establishment of a dual degree program, requiring collaboration between CLA&S and a professional school as well as cooperation between the university and industry, demand great dedication and constant attention. Given inevitable changes in personnel--through sabbaticals, resignations, hiring freezes, or retirements--it is vital that more than one faculty member/administrator assumes responsibility for implementing a program like EUROTECH. It is highly desirable that institutionalization would result in continuity.

C. BACKGROUND and ORIGINS

Before EUROTECH was launched, the German Section of the Dept. of Modern and Classical Languages had already prepared the ground.

a) The undergraduate curriculum in German had been redesigned to accommodate nontraditional majors by including special-purpose language courses and interdisciplinary topic courses. Participants in EUROTECH have been able to follow the course requirements for a major in German Studies, which consists of a minimum of 18 credits (six courses) on the 200 level in German; 6 credits (two courses) on a German topic taught in English, and an additional 12 credits (four courses) of work in related fields. The internship carries 6 credits (German 290).

b) German faculty had investigated German instruction for special purposes and the ways technology can be integrated into the classroom to serve more diverse students more effectively. In 1992 the American Council on Education selected UConn's "German in Context" proposal for support and asked the University of Rhode Island to mentor our efforts. Indeed, our initiatives prompted the American Council on Education to invite us to serve as mentors in their next round of the project "Spreading the Word." All six full-time members of the German section are committed to the EUROTECH Program and all except one have been involved in the development of courses, course materials, faculty development, testing, etc.

Prof. Kecht, who was to co-direct EUROTECH, had already successfully directed the "German in Context" project and become familiar with central issues of Languages Across the Curriculum (L.A.C.). Prof. McCormick, a teacher with experience in scientific German, was willing to teach beginning German to EUROTECH students and has been teaching the engineering sections of German 131 and 132 since the fall of 1993. Prof. Strack and, later, Prof. DeVries have been key faculty for the development and teaching of the new 1-credit modules that integrate guest-speakers from the School of Engineering and industry. Both have been instrumental in bringing well-structured technical content as well as cross-cultural know-how to EUROTECH classes. Prof. Wright, experienced in assessment, was willing to become a certified OPI tester and has helped us establish records of EUROTECH students' progress in German.

In the School of Engineering, many components that made our project feasible and timely were already in place.

a) The dean was very supportive of our efforts and encouraged Prof. Long and Prof. Kecht to establish a collaborative undergraduate curriculum.

b) Several departments of Engineering already offered courses in environmental engineering, EUROTECH's thematic emphasis.

c) Several engineering professors fluent in German were eager to help teach the 1-credit EUROTECH modules and contribute to other aspects of the program. Profs. Solecki (mechanical), Long (civil), Coughlin (chemical), and Olgac (mechanical) have been regular guest-speakers in EUROTECH classes. Prof. Koehn from Statistics has joined this group and has also been a very enthusiastic "visiting" instructor.

The feasibility of the proposed EUROTECH Program has to be seen in a context larger than the university, however. Since our program is designed to prepare students better for their careers in an unusually international profession and to establish strong ties between American and German industry, some particular features of the state of Connecticut need to be highlighted here. More than a hundred German companies are located in Connecticut. Indeed, of all the fifty states, Connecticut has the highest concentration of such companies and the largest proportion of its commerce dependent upon international trade. As indicated above, this economic context has turned out to be extraordinarily influential in the establishment and implementation of EUROTECH.

Another significant component in our plans for EUROTECH was the very healthy cooperation between UConn and the Fachhochschule Regensburg. For several years now, there has been an exchange of students in Computer Science and Chemical Engineering. Every year four to five students from the Fachhochschule Regensburg come to our university. EUROTECH has been in the fortunate position of drawing its teaching assistants from the ranks of those German engineering students. Their expertise and their creativity have been critical in the design of the 1-credit modules, construction of a EUROTECH homepage, authoring software, and publishing the EUROTECH Newsletter. In fact, it is hard to imagine that all these different tasks could have been carried out without the German students' dedicated support. (And it is to the credit of the CLA&S administration that they have continued to fund these TA positions beyond the expiration of the grant.)

In 1992/93 EUROTECH was given strong administrative support for planning, which was crucial to the feasibility of the program. The dean of CLA&S had allotted funds for an additional German instructor qualified to teach German to engineering students. He had also supported German faculty travel to conferences and workshops on innovative language instruction and encouraged the section's efforts to establish German-across-the-curriculum projects with other liberal arts departments. Later on we will address the changes in institutional context, particularly those that may turn out to harm EUROTECH.

D. PROJECT DESCRIPTION

1) INSTRUCTION

Ever since we started the EUROTECH program, Prof. Terry McCormick, an extraordinarily dedicated and experienced pedagogue, has been teaching the engineering sections of beginning German (German 131 and 132). He supplements the textbook used by all sections of beginning German adding vocabulary, discussion topics, realia, and exercises appropriate to engineering students (Appendix B). The two sections of EUROTECH students (with about twenty students each year) usually merge into one section of intermediate German (German 133 and 134) the following year due to attrition caused primarily by students dropping out of engineering. Parallel to German 133, EUROTECH participants take the first module (German 220) of a specially designed series of three content-based language classes. They continue with this series in their fourth and fifth semesters. The upper level classes are chosen from the course offerings made for the German Studies major (Appendix C). Several courses do "double duty": they fulfill requirements made by the School of Liberal Arts and Sciences as well as by the Department of Modern and Classical Languages.

The module series is an indispensable component of the EUROTECH dual major degree because its courses fully integrate German and engineering. The numbers and titles of these courses are: German 220, Recitation in Applied Mechanics; German 221, Introduction to the Sciences; German 222, Fields of Technology.

Each of these one-credit courses meets one hour weekly during the fourteen week-semester. The instructor of these courses (Prof. Strack or Prof. DeVries) is assisted by two native German teaching assistants. Usually one of these assistants is in computer science student and the other in engineering or physics. The instruction team thus consists of a professor of German and two assistants trained in science.

The syllabus of each course is structured around guest lectures delivered by engineers from industry or specialists in academia. Recitation in Applied Mechanics (220) is an adjunct module course. This means the subject matter we teach relates directly to an engineering course in Applied Mechanics. Two professors from the School of Engineering, Richard Long of Civil and Environmental Engineering and Roman Solecki of Mechanical Engineering, provide the lectures in this course (Appendix). Introduction to Technology (221) and Fields of Science (222) are module courses in which the content is independent of other courses in the program (Appendix D). The participating lecturers in these courses are German speakers from Connecticut industry and the UConn community who lecture on topics of their choice.

The pedagogy in this series is shaped by the content-based nature of the courses. That is, the science and engineering subject matter determine the method of instruction. All materials we use correspond to the lectures, and if we have extra time, we deal with additional engineering topics. Therefore, student work is evaluated as much, if not mostly, for its technical accuracy as well as for its German precision.This is why science-trained assistants in these courses are important. For the preparation of homework and handout materials these assistants are invaluable.

As part of course procedure, we receive a text of the lecture or a précis weeks in advance so that the assistants and the professor of German can go over the material. The assistants quickly grasp the lecture content and its vocabulary. Once the assistants provide the professor with the necessary technical background or explanation, he is able to effectively simplify or systematize the preparatory materials for our students. In the classroom too, the assistants are a valuable presence for they frequently field student questions and offer explanations. Having the assistants in the room also means more assistance and monitoring for classroom group work. TAs who like to teach occasionally present mini-lectures during the class periods.

We have been able to incorporate an array of visual and textual material into the courses. Engineering firms often produce stylish brochures or even videos about their products and facilities. We have collected many of these and have had the opportunity to view segments on topics such as auto emissions, the Volkswagen beetle, and solar energy projects of the European Community. We have also used the Tessloff *"Was ist Was"* books with notable success. These richly illustrated books are educational texts written at a level for young Germans. Each volume features a topic, such as mathematics, mechanics, light and color, the automobile, etc. The language is perfect for our students. We have designed homework assignments based on selected portions of these books. The Applied Mechanics students, for example, will do their final projects on mechanics phenomena described in the book. They will conduct simple experiments in class to explain, for example, the mechanics of the incline, the lever, and the pulley.

Finally, we have used the technology of computerized hypertext programs to enhance our instruction. One such project, developed by adjunct faculty members Christian Majari and Peter Sandgren, is entitled "Ottomotor," named after the 19th-century German engineer and inventor of the combustion engine, Nikolaus Otto. This program explains the history, construction, and mechanics of the four-stroke engine (Appendix E). German 222 students have had to work with the "Ottomotor" as language lab assignments. After one assignment with the computer program, for example, each student had to prepare an oral explanation of a specific cycle in the engine.

Another project, currently nearing completion, is entitled "Hubschrauber" (helicopter). With the support of the EUROTECH assistants, Prof. DeVries has developed this program, which is based on a talk Mr. Wilfried Meier of Sikorsky Aircraft delivered to the German 221 course last spring. His lecture was structured according to basic categories: the helicopter's history, its principles of function, its technology, limitations and prospects. For illustration he used color slides. Mr. Meier provided Prof. DeVries with his text, photos, and other background information. These images and texts were then scanned into the HyperCard program to make an interactive language module that both resembles the original lecture and provides additional features. Students navigate through the HyperCard material, which is arranged in a series of cards called a stack. The "Helicopter stack" offers thirty some cards grouped in the categories of the original lecture. Cards contain a portion of text and usually a picture or graphic illustration (Appendix F). Difficult words are underlined, and with the click of a mouse a definition appears. With the click of another button, they hear the text read aloud. After a student pages through a given section, a quiz appears to test comprehension. While the original lecture with the interaction between students can never be fully recaptured, this program offers the attractive option that students can work through the program at their own pace and as often as they like.

It has been a pleasure for the EUROTECH staff to observe the positive student response to these unique courses. Students value their opportunity to engage in substantial discussion of engineering topics in German. Their success is evidenced in the level of their work and the quality of their participation. It is thrilling to listen to sixth semester language students discuss bridge engineering or the mechanics of the jet engine. It is impressive to watch students raise substantive questions to lecturers about topics like the automatic turning rotary, the rotor head of a helicopter, or the radiation levels in forest floors of post-Chernobyl Europe.

In the course of this series, students learn technical vocabulary and develop skills to discuss engineering topics intelligently. For several reasons, students succeed in this series: They benefit from individualized attention; they respond to the languages and topics of science; the one-hour meeting is conducive to their productivity; and they are required to make their own presentations in German.

The team-teaching approach in this series gives the students high exposure to several speakers of German. The interaction between professor, assistant, and student makes for lots of dialogue and interaction. Our instruction is learner-centered, not teacher-centered. Students in these modules learn the kind of German they will use in the workplace. When an entire class is focused on the same goals and internally motivated, the classroom activities shed artificiality and gain authenticity.

The EUROTECH students are science minded and they respond to the "languages" of science such as mathematics, physics, and chemistry. When these topics are presented in German, students approach them with familiarity. The universality of the subject matter enhances students' receptivity for the "foreignness" of the German. For example, in German 220, when we review the three laws of Newtonian physics, students are familiar with the content. Consequently, though the German used to discuss these laws challenges the students, their confidence is bolstered by their intuitive grasp of what is being discussed. Students are not only receptive to the basic content of our discipline-based instruction but also fundamentally interested and motivated. Students who make a commitment to a five-year dual-degree program are confident of what they seek in their education. Their genuine interest in these courses fosters a productive learning environment. While they see their dual-degree education as something broader than strictly vocational training, they do see a direct connection of their education with their future careers.

The student projects, which they present at the semester's end for a substantial portion of their grade, have also proven effective. These presentations blend with the central component of the series: the guest lectures. Four times each semester, students observe professionals presenting subject matter in German. Finally, the students have opportunities to give their own presentations. Students benefit from observing others' styles, rhetorical techniques, and use of visual media; they have a model for shaping and molding their own presentations. Our students in the entry-level module (220) give their final presentations in groups of two or three since this eases the task of the spoken German, which is for them the most challenging. With the confidence gained from pairing up, they present their material in accordance with their ability. In these presentations, students have demonstrated, for example, the use of the incline or multiple pulley mechanics. Since our advanced students (222) feel comfortable in their spoken German, they are required to give mini-presentations (eight minutes) already as midterm assignments. They have spoken, with visual aids, on topics such as "Precursors of Chemistry" and "Chemistry in the Future." The final presentations of the 221 and 222 students range from fifteen to twenty minutes and have featured topics such as bridge engineering, the jet engine, disposal of toxic wastes, and the principles of air flight.

Finally, the module series succeeds because the one-credit hour format is both refreshingly new in the humanities context and comfortably familiar in the science curriculum. Few curricula in the arts and sciences offer one hour courses; most students' programs consist of traditional three- and four-hour courses. Language courses are no exception. The German course, as we offer it, is unusual in this concentrated and distinct form. The novelty and innovation appeals to students and fosters motivation. As part of their science curriculum, however, EUROTECH students are accustomed to one-hour sessions in the form of their regular laboratory work. In this sense, the module resonates with familiarity, and students understand the importance of maximizing their effort in such concentrated course meetings.

In spite of the convenience and benefits of the module design, the single-hour class sometimes puts challenging constraints on the material that can be covered. This lament is no doubt common from instructors blessed with flexible course content and enthusiastic students; in such cases even four contact hours per week can seem too few. But one fifty-minute period per week sometimes frustrates ambitious curricular pursuits, particularly when student presentations, language lab work, and student discussions are components of the course. While one hour suffices for guest lectures, the preparation and review periods could be better served with 90-minute periods. Since the EUROTECH curriculum has students at maximum semester credit hours, adding hours to the total sum may not be feasible now. We might, however, consider creative arrangement of class sessions so as to gain a few minutes per meeting, perhaps at the sacrifice of one or two total class meetings.

Study trips to Germany during spring break are part of the instructional offerings and also an element of our promotion efforts. The first trip took place in 1995, another one is scheduled for 1997. The German Academic Exchange Service (DAAD) sponsored the project and has been approached for further funding to provide an educational experience at minimal costs to EUROTECH participants. Such a study trip takes freshmen and sophomores to German companies as well as institutions of higher learning. Students learn a great deal about the dual educational system in Germany; they see how internships and apprenticeships are structured in companies; they have occasions to talk to young people getting trained on the job; they gain some insight into the corporate culture of German industry; and they encounter some of the differences between life in the US and in Germany. A study trip like that also represents an opportunity to probe the students' cultural proficiency, so the accompanying faculty members build practical cultural assignments and questionnaires into the program (Appendix G). We have observed that motivation increases tremendously among students who have been able to see where they will be working as *Praktikanten*. In fact, the brief language and culture immersion has encouraged some EUROTECH students to add study abroad to their work abroad. Several students have also decided to attend intensive summer German courses at the Goethe Institute.

EUROTECH requires regular oral proficiency testing and two Goethe examinations, namely the *Zertifikat Deutsch* for second-year students and the *Mittelstufenprüfung* for students returning from their internships in Germany, thus we know how important it is that our students are linguistically prepared to become interns in a German company in their senior year. Prof. Wright was trained as an OPI tester soon after we started the EUROTECH program. She has been instrumental in implementing this kind of annual language assessment. During the last weeks of every spring weekend, Prof. Wright tests the EUROTECH students. Novice-high or intermediate-low have been the results after one year of instruction; intermediate mid and intermediate high after two years; intermediate high to advanced mid after three years. We expect our students to be at the level of advanced high before they assume the internship in Germany.

We were fortunate to receive major funding from a regional agency for the establishment of a EUROTECH multimedia lab. The Yankee Ingenuity Initiative, an institution supporting high-tech projects in Connecticut education to improve the skills of the local labor force, assumed the costs for hardware (15 Macintosh learner stations and a sophisticated author station; television/VCR stations, and other equipment) and software (for the design of complex interactive computer modules). The selected hardware and software provide EUROTECH students with an effective, learner-centered foreign language education that would take engineers' learning styles and their interests into account. The equipment of the laboratory allows faculty and teaching assistants to develop, test, and use custom-made software consisting of interactive learning units combining the foreign language, technical content, and cultural information in a pedagogically sound way. The university renovated the facility of the old lab and opened a budget line for a full-time lab director (Appendix H). Ms. Barbara Lindsey started her work as the lab director this past September. All together, more than $200,000 were invested in enhancing the learning process of our EUROTECH students and other foreign language learners.

Part of the instructional agenda has been German-language instruction for engineering professors and staff participating in EUROTECH. For two years Steven M. Gilbert, a translator (Ph.D. in German and many years of teaching experience) familiar with science/technology terminology gave weekly instruction (2 hours) to four engineering professors. These sessions included discussion of technical articles and literary pieces that have appeared in the German press, and a review of some of the finer points of grammar. Furthermore, two of the faculty involved in this program, Uwe Koehn and Richard P. Long, and Mary Smith, a staff member working for EUROTECH attended intensive courses at the Goethe Institute in Germany to further improve their language skills. Prof. Long passed the *Zentrale Mittelstufenprüfung* after his Goethe Institute visit in 1996. Mary Smith passed the *Zertifikatsprüfung* and has formally continued with her German training by attending undergraduate classes at the university.

2) PROMOTION and RECRUITMENT

In the meantime our EUROTECH promotional materials consist of two brochures, a bi-annual newsletter, and a steadily expanding homepage on the Internet (http://www.eng2.uconn.edu/EUROTECH) that has already been accessed 500 times (Appendix I).

The brochures go out to potential UConn freshmen through the Admissions Office and the School of Engineering (Appendix J). We have also sent them to mathematics teachers in Connecticut and Massachusetts as well as to German teachers in New England. The materials are also available at special EUROTECH information desks during "Open House," a bi-annual event sponsored by the School of Engineering, which is attended by interested high school students and their parents. At freshmen orientation (May through June), EUROTECH faculty and students inform the new students about the dual-degree program and provide them with the promotional material.

The electronic posting of information about the program, its faculty, its student participants, its industrial support, etc. is becoming a very significant recruitment tool, and does not put a strain on the operating budget. The EUROTECH assistants put a lot of creativity and energy into "constructing" our homepage. Layout and contents are definitely geared to a student audience.

The potential EUROTECH student and the enrolled EUROTECH students are the primary audience of our bilingual newsletter. When we wrote the first issue (Appendix K) we were not sure yet whom we really wanted to reach, and so its design is rather bland and too serious. Now that we have gained more experience (with desk-top publishing) and realized that student recruitment is one of the most critical tasks, we are creating a jazzy publication that appears once every semester. Students were asked to participate in a competition to create a permanent EUROTECH logo; those who have done summer internships were asked to contribute brief articles about their work experience; those currently studying/working in Germany were asked to submit interesting stories with a cross-cultural dimension. The second issue of the newsletter is about to appear.

Another, more informal, way of increasing the visibility of EUROTECH, has been our hosting of monthly Kaffeestunden where students can meet and talk with all faculty involved in the program, and inviting the campus public to EUROTECH-sponsored extra-curricular events (Appendix L). We realize that EUROTECH participants would actually like more of such fun activities that build group spirit, but at the same time, their tight schedule does not even allow them to attend regularly.

In order to increase enrollments and give students a chance of signing up for EUROTECH late, Prof. Long has designed new course schedules adding them to those already worked out for freshmen without previous knowledge of German (Appendix M). Since we almost immediately had requests from several sophomore and junior students to join EUROTECH, different course configurations were necessary in order to keep the program duration to five years. Flexibility seemed very appropriate. Rearrangement of a course schedule to begin as a sophomore is relatively simple. We have also had two requests from Chemical engineering students to begin the program at the start of their junior year. This makes the schedule a bit more complicated but also has advantages. One of the chemical engineers, Brian Schwegler, who began the program as a junior has arranged his courses so that his engineering courses are practically complete and the ones that remain are requirements in German. Brian began his German internship with *Bayer* in June 1996, a year before we expected anyone to be ready, and he will complete his undergraduate requirements at the University of Konstanz in a study abroad program. Study abroad is an option, not a requirement. A mechanical engineering student, James Frey, is also progressing faster than initially planned. James will begin his German internship with *Trumpf*, a machine tool company in Ditzingen, in February 1997. James is now attending the University of Karlsruhe.

Promotional work for EUROTECH has also been done by means of conference presentations and articles--a means unlikely to increase student enrollments but to disseminate information about our program and to share relevant experience and pedagogical insights. As mentioned in previous progress reports, Profs. Kecht and Strack have attended several conferences over the past years, where they talked about various aspects of the EUROTECH curriculum and the program goals. Prof. Kecht's active role in the national consortium of Languages Across the Curriculum has allowed her to make significant contributions to L.A.C. projects sponsored by the American Council on Education. In this way, representatives of many schools across the country have learned about EUROTECH. Currently, Prof. Kecht is a mentor to German and Spanish faculty at the University of Massachusetts and French and Japanese faculty at Central Connecticut State University. Both universities are planning to establish institution-specific versions of L.A.C. In the summer of 1995, Prof. Kecht also served as an instructor at the month-long NEH Institute on German Across the Curriculum that was held at the University of Rhode Island (directed by Prof. John Grandin).

Profs. Kecht and Strack have co-authored several articles on EUROTECH that have already been published (Appendix N). Prof. DeVries and Prof. Long are currently completing an article on the 1-credit EUROTECH module series and planning to submit it to the journal *Foreign Language Annals*. We hope that our scholarly efforts at disseminating information about the design, administration, and implementation of EUROTECH will keep us reflecting on various aspects of the curriculum and, in turn, help us improve the program.

Short articles describing the program have appeared in miscellaneous publications, and we intend to send out more information so that people in industry are alerted to EUROTECH.

3) COLLABORATION WITH INDUSTRY

When planning the EUROTECH program, the co-directors designed not only the curriculum but also the links between the university and industry so that they would last. Although not in the original FIPSE proposal, we felt that advice from industry was vital for the EUROTECH

Program.

During the fall of 1993, an external advisory board was formed from industry and governmental agencies to guide the development of the scholastic and industrial components. The dialogue between academe and industry was to ensure that we prepare engineers properly for their professional lives, the linguistic and different cultural challenges; engineers who can assume future leadership roles. The industrial members of the board consist of representatives from companies founded in both Germany and the USA (Appendix O). The board meets twice a year. During the initial phase of the program the board was divided into three working subcommittees: instruction, internships, and institutionalization. The board is now a permanent part of EUROTECH.

The enthusiasm of the board for the EUROTECH Program and the willingness of these busy people to give their time has demonstrated to the university and the State of Connecticut the need for this program. The companies represented on the board provide German-speaking engineers to lecture in some of our courses, summer internships for the students in the USA, and contacts for German internships. Some have also contributed to student scholarships and the operating budget.

Under the heading "Instruction," we have already discussed in what ways the instructional program of EUROTECH has gained from the contributions of board members. Here we want to address what important role industry has played in helping us make arrangements for summer internships and work abroad.

The co-directors spent two weeks each summer visiting companies in Germany meeting with CEOs and directors of human resources divisions of about thirty companies in various parts of the country (Appendix P). The purpose of these trips was to introduce EUROTECH to German industry, receive feedback, and discuss the possibilities of internships. Information about EUROTECH was sent to each company well in advance of the visit. A number of contacts were established with the help of our industrial advisory board and the German Fraunhofer Gesellschaft. Some visits lasted two to three hours and often included a tour of the training facilities as well as discussions with the managers of the company's internship program. The response was usually favorable. Even companies that do not have subsidiaries in the U.S. and are not contemplating expansion in America expressed their willingness to accept qualified EUROTECH students as *Praktikanten*.

In our conversations with business leaders and engineers, we realized how important it was to seek out the input of German industry early in our program so that we could make every effort to prepare the students adequately for their work experience abroad. For this purpose, we had also devised a questionnaire that would allow us to take the specific requirements of each company into account and thus make the placement of qualified EUROTECH students mutually beneficial (Appendix Q). The information gathered through the questionnaire has allowed us to put together a data bank that can be updated and expanded as we get additional contacts.

We came to understand that our students should have a *Grundpraktikum* (basic internship) with a U.S. company before embarking on the challenge of work abroad. In fact, most companies told us that they would be reluctant employing an American *Praktikant* without any industry experience. We collected a variety of educational plans outlining what is expected and required of engineering students in their *Grundpraktikum.* Prof. Long prepared and discussed basic guidelines for such *Grundpraktika* with companies giving our students summer work (Appendix R). It is our goal to have the students spend at least three months in engineering-related work before embarking for Germany.

As part of a structured follow-up on the students' U.S. internships, we require the student to submit a report, partly in English partly in German, and also ask the student's supervisor to rate the quality of the student's work, aptitude, attitude, etc. (Appendix S). Most students and supervisors have complied, and we can now inform the German firms of the past performance. This should give the companies to whom the students apply for a six-month internship a good idea of what EUROTECH *Praktikanten* can do. This kind of information should bring expectations into line with performance and create better long-term relations.

We appear to have enough potential positions for all specialties in the program with the exception of civil and environmental engineering. Attempts have been made over the last two years to establish relationships with civil, environmental engineering firms and construction firms. The difficulty seems to be that these firms operate locally and therefore have less interest in the global market, even though they may be firms that have offices both in Germany and the USA. A few firms that were contacted last summer (1996) have expressed a mild interest in the program, so we are working to strengthen the relationships. There are two civil and environmental engineering students in the program who will be ready for their German internships next summer (1997). We are also exploring possibilities with agencies that specialize in arranging internships for young professionals in Germany.

E. EVALUATION and PROJECT RESULTS

In our initial proposal, we stated that there are three categories of evaluation: 1) collecting basic data on the students in EUROTECH, 2) regular inquiries to find out how much they are achieving (linguistic, cultural, and technical competence), and 3) program self-assessment.

All three years we applied the same standards: We have put together a student profile consisting of EUROTECH participants' math and verbal SAT scores and their transcripts (indicating their performance in the pre-engineering courses, general education classes, and in German 131-133). The drop-out rate appears to correlate with poor academic performance as indicated by grade point averages below 2, but there may be other reasons. To determine what these other reasons might be, we made up special questionnaires for students who dropped out after the first semester. Phone interviews based on the questionnaire revealed the fact that for too many freshmen, college is an overwhelming experience. The objective needs established in each class may not correlate with the subjective needs and wants of the learners (making academic problems likely). From the interviews it also became clear that some incoming students find it difficult to work methodically, which causes problems in most of their classes. Prof. Long has made great efforts to accommodate "latecomers" (sophomores and even juniors) who might be less intimidated by the work for a dual degree, because they know that they can handle the engineering curriculum.

Our EUROTECH track in beginning and intermediate German is different from other German classes in offering technical content, German-speaking engineering faculty, and a special industry-oriented slant of "Landeskunde," but the students use the same textbook as all the sections of German 131-134 do. The EUROTECH students take the same general exams (written, oral, and aural) as all the other students. Comparing test results of the EUROTECH students to those of the other participants in beginning German, we have not discovered a statistically significant difference. From the OPI results and the Goethe *Zertifikatsprüfung* we know that EUROTECH students do just as well in German as other students. We will still have to make a long-term plan for systematic analysis of specific learner needs, because we cannot yet identify engineering students' particular strengths and/or weaknesses in language learning. We have observed, however, that students doing well in their pre-engineering courses are equally good in their German classes. This may have less to do with particular scientific or linguistic predispositions than with students' general intelligence, motivation, and dedication.We may ask colleagues at other schools with international engineering programs to share evaluation instruments as well as results.

In order to find out what helps or hinders student progress in the EUROTECH German classes, we have devised questionnaires pertaining to the guest presentations, to the quality/organization, etc. of the German instruction in general, and aspects of the EUROTECH program (Appendix T). Since we have not yet even reached the end of the first cycle of our program, it would be premature to draw firm conclusions. Most students were satisfied with the German instruction, found the guest presentations interesting and stimulating, and enjoyed the field trips to German companies, but they also spent a lot less time on German than on their engineering classes and clearly see engineering as their top priority. Interestingly enough, the students put a lot more time into their German studies in their second year than in their first year: 25% - 35% compared to an average of 10% in the first year.

The student responses to our questionnaires have indicated some problems that we have tried to address: 1) advisors in the School of Engineering do not seem sufficiently informed about EUROTECH and/or do not demonstrate sufficient interest in their students' academic plans and their career goals; 2) students seem to have inaccurate notions about the amount of work college courses require; 3) students seem to think that mere participation in EUROTECH entitles them to summer jobs and an internship in Germany. Prof. Berentsen's external evaluation report addresses these and other issues in more detail. (Appendix U).

Our reflections on the curriculum of EUROTECH, the pedagogical goals and methodologies, as they are articulated in staff meetings, at conferences, and in research papers, definitely help us to develop an increasingly coherent and rigorous program. We believe that such regular self-assessment benefits our students and colleagues at other institutions. We will continue collecting data on students' academic performance (in their German and engineering classes), their language proficiency (with accredited Goethe Institute exams, OPI testing), their professional performance (cf. supervisors' reports and self-reports), their attitudinal changes with regard to cross-cultural awareness (cf. questionnaires, internship journals), and their satisfaction with the program. Obviously, students' placements with German companies, their performance there, and their linguistic and engineering abilities upon their return will yield new data for a systematic evaluation. The capstone project in the student's last semester, synthesizing their technical training, work experience, and language proficiency, will allow yet another kind of evaluation. We plan to have outside evaluators (e.g., German-speaking engineers from industry) help judge the students' work.The quality of student projects will to a large extent indicate the adequacy of preparation that we have provided to the EUROTECH participants and point out what we ought to improve. And last but not least, students' career placements upon graduation and their career paths will be an important factor in assessing the success of the EUROTECH program at the University of Connecticut. Judging by the response we have had from the Advisory Board so far, industry is eager to hire EUROTECH graduates. The university's Environmental Research Institute is also very much interested in EUROTECH graduates' contribution to the transfer of know-how in the area of pollution prevention technology. It will, in fact, be a great challenge to graduate the numbers CEOs and research institutes want to see.

Our plans for further dissemination resemble several of the activities described under "promotion." Prof. Kecht's involvement in the national consortium for Languages Across the Curriculum will allow many opportunities for dialogue with other institutions of higher learning interested in forging links between foreign languages and professional schools.

F. SUMMARY and CONCLUSIONS

Three years into the EUROTECH program, we think we have managed to establish the foundation of a learner-centered curriculum that stresses experiential learning and links academe with industry as much as the U.S. educational system allows. Even though there are still some faculty members/advisors in the School of Engineering who need to be persuaded of the educational and the market value of international engineering, we believe that EUROTECH's visibility on the campus of the University of Connecticut will in time lead to a more concerted effort to recruit top high school seniors who can cope with the work load of the dual-degree program. Once the School of Engineering has found successful strategies for general student recruitment, EUROTECH's current share of 10% of that pool will increase. And even if it stayed at the same percentage, we could hope to have a larger number of beginners and thus a larger number of graduates, which everybody involved in this program would like to see.

If student recruitment requires constant attention and lots of initiatives, fundraising also requires an inordinate amount of labor. Our efforts to raise money for a decent operating budget and student scholarships have thus far not been very successful. Our few successes have been linked to companies that see the possibility and high probability of hiring our graduates soon. This situation should improve, we think, as soon as EUROTECH participants start graduating, which is in 1998. We know that for the successful continuation of the program activities, we will increasingly depend on support from private donors. The State of Connecticut has dramatically cut the operating budget of the university (to the level of 1987) and has announced that another 10% cut is pending. Should this really come true, key faculty positions in the EUROTECH program will be jeopardized.

When we look at the educational values of this collaborative program, the intellectual gains of faculty/staff involved in EUROTECH, and the long-term benefits for Connecticut industry, we must not forget *how* much work dozens of people have invested in the program. For anyone interested in establishing any kind of inter-disciplinary degree program like EUROTECH, it is important to stress that beyond a good institutional and regional infrastructure, you need faculty, teaching assistants, and staff who are willing to work beyond the call of duty. Furthermore, success of such a project largely depends on the kind of moral *and* financial support principal investigators receive from their deans and provosts/presidents. Unless there is demonstrated recognition (through the university's merit/promotion system) of curricular innovation, creative pedagogy, and intensive outreach work, it may be unwise to start a program like EUROTECH.

G. INFORMATION for FIPSE

We are grateful for the generous funding that FIPSE has given the University of Connecticut. Without FIPSE's help, we could never have established EUROTECH. We would also like to express our thanks for the flexibility our program officer demonstrated when a key faculty member in EUROTECH left the university completely unexpectedly causing great disarray and of course considerable anxiety among the EUROTECH staff and students.

It was particularly helpful to us that FIPSE required from the very beginning a detailed plan and timeline for EUROTECH. All the considerations and decisions in the planning phase made implementation so much easier than it would have been otherwise, for we did not have to improvise any of the major steps. Such careful planning may seem superfluous to outsiders, but we cannot sufficiently stress its long-term benefits. The same holds true for FIPSE's insistence on evaluation measures built right into the program.

We also think that we benefitted a great deal from the annual project directors' meetings in Washington, D.C., particularly through the opportunities for networking and information-sharing. It would be very helpful, if FIPSE could establish an electronic network that would link project directors administrating similar programs. There are so many issues and situations where one would be grateful to have peers who could make suggestions and offer help.

What we missed in our work with FIPSE was a) a detailed response to our annual reports, and b) a program officer's visit to our campus. Written responses to our work and a visit to the University of Connecticut would a) have given us a better sense of direction and accomplishment, as well as an external view/critique of our work-in-progress, and b) most likely have resulted in increased administrative support due to a highlighting of the national relevance of our project. We ask you to consider both opportunities for constructive communication in your further work with other principal investigators.

E. APPENDICES

A	Article "Jump-starting International Careers in Technology: German and Engineering at the University of Connecticut"
B	Samples of technical content in German 131
C	Page 73 from the General Catalogue (Univ. of Connecticut) presenting requirements for the major in German Studies
D	Syllabi and material samples of German 220, 221, and 222
E	Samples of the activities in the computerized instructional module on the four-stroke engine
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G	Cultural questionnaire
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I	Illustration of EUROTECH homepage
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O	List of Advisory Board Members
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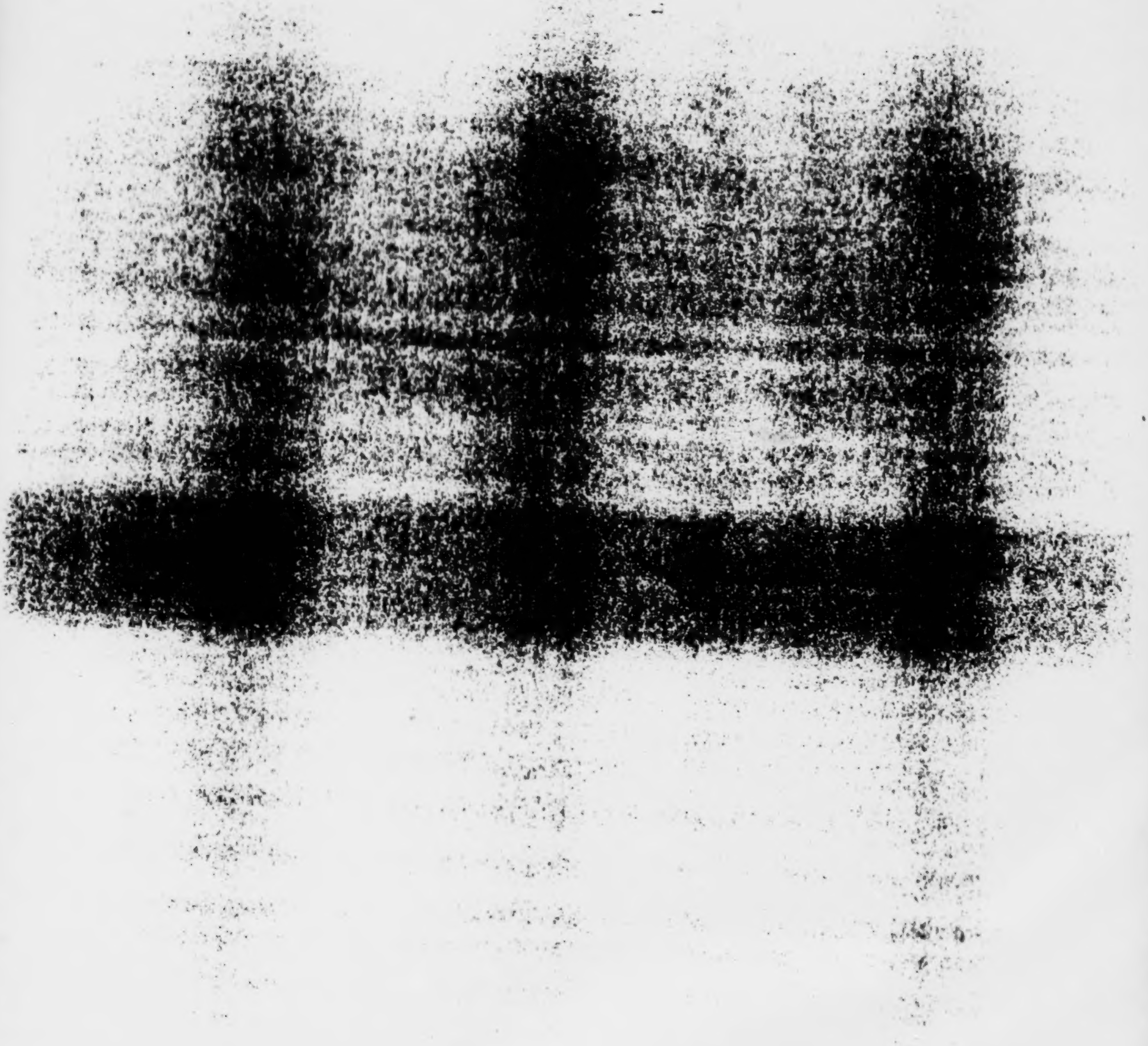
R	Comments on summer internship: description of requirements
S	Samples of summer internship reports
T	Evaluation forms used in various EUROTECH classes
U	External evaluation by Prof. W. Berentsen

APPENDIX A



Jump-starting International Careers in Technology: German and Engineering at the University of Connecticut

MARIA-REGINA KECHT AND THOMAS STRACK

THE *NEW YORK TIMES* OF FEBRUARY 20, 1995 offered its readers an article entitled "Employers Wary of School System." This article was both shocking and highly informative for educators. According to a recent survey of American business, the article stated, "employers say one-fifth of American workers are not fully proficient in their jobs, and they express a lack of confidence in the abilities of schools and colleges to prepare young people for the workplace.... Most alarming to researchers was the skepticism that employers expressed about young, new workers."[1] As it turns out, the reputation of the applicant's college, academic performance or teacher recommendations are worth very little; the qualities that count most for employers hiring young employees are attitude, communication skills, and previous work experience.

Of course not only American business seeks employees fitting its expectations of a productive, efficient and self-reliant work force; foreign companies operating in the US do also. In fact, German companies have even higher expectations. In Germany, businesses are accustomed to a skilled and well-trained labor force that they help to create in cooperation with vocational schools in the so-called "dual system." The system is called dual because it integrates practical training on the shop floor and at company training facilities with part-time instruction at vocational schools. Germany's school-to-work system helps transfer nearly 70% of the population at the age of sixteen from full-time secondary school to apprenticeships.[2] Depending on the set of skills required by a particular occupation, an apprentice trains at a firm on a part-time basis from two-and-a-half to three-and-a-half years (the latter being the case, for example with the automobile maker BMW). For three to four days a week, the trainee works at a company, carrying out very specific tasks under the guidance of experienced co-workers and certified masters of the trade. At the vocational school *(Berufsschule)*, general education is combined with courses specifically geared toward the trainee's prospective job in business or industry.

As Hilary Pennington, the president of *Jobs for the Future,* says about the German system, "[the] partnerships between employers, workers, and schools are institutionalized; the status of work-based learning is high, and a society-wide consensus exists that investing real resources in young people's school-to-work transition is vitally important."[3] In 1993, the average annual net cost per trainee across all German companies amounted to almost DM 18,000,

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even if trainees leave their employers after the training period. Trainees from other companies can do their job since standardized examinations by local chambers of commerce ensure a level of skill and knowledge valid throughout Germany.

A similar cooperation exists on a higher level of education for young professionals. German business and universities try to get engineering students involved in industry during their studies, both in Germany and abroad. It is quite common, and some employers actually think preferable, that students first do an apprenticeship before going on to a *Fachhochschule* (polytechnical institute) or a technical university, where they are again required to spend a couple of semesters as industry interns. Students graduate as engineers proficient in theory and practice. In Germany, to quote from the article in the *New York Times*, "employers and schools have common goals and strategies," whereas in the US, employers are "wary of the school system."

The EUROTECH program at the University of Connecticut is an innovative response to the problem.[4] In close collaboration with Connecticut industry, which has an unusually high number of German companies, and with the support of the Fund for the Improvement of Post-Secondary Education (FIPSE), the university has established a five-year program leading to a dual degree, a B.S. in Engineering and a B.A. in German. The program also includes a six-month internship in Germany.[5] To attract enough students, the EUROTECH program is open to any qualified engineering student and requires no previous knowledge of German.

To ensure that the program will meet the needs of Connecticut industry, the administrators of EUROTECH invited the presidents of German and US firms to join an advisory board to oversee the program and assist in its development. This advisory board is composed of executives of such leading German tool-manufacturers such as *Trumpf* and *Index*, pharmaceutical giants like *Bayer*, as well as American companies doing global business. Representatives of *Pratt & Whitney* and *Otis Elevators* are also interested in our graduates. The members of our board have committed themselves to actively serving on a number of subcommittees planning internships, gathering instructional materials, providing German-speaking engineers and scientists for EUROTECH classes, opening their companies for guided field-trips, and financially supporting the program.

Because Connecticut industry has made this commitment to such an educational experiment, the university has been able to create a program that infuses the traditional curriculum with the technical and social reality of the international workplace. The members of the EUROTECH advisory board, in close cooperation with the EUROTECH teaching staff, offer our engineering students the opportunity to learn how to function in such a challenging environment and develop the desired communicative skills and problem-solving techniques. The program encourages individual initiative, self-reliance, and the ability to work in a team— the basis of what the EUROTECH advisory board considers an attitude appropriate to industry.

Communicative skills are equally important, necessary as they are for successful dissemination of information and the articulation and the discussion of ideas. The study of foreign languages not only facilitates international communication and exchange of technical know-how, but it also encourages the learners to reexamine cultural traditions and personal views. Students become aware how important language is and how it defines their workplace, enhancing or obstructing team efforts. Industry also requires of EUROTECH graduates ample work experience, both in the US and in Germany. The program therefore includes regular summer internships with Connecticut companies and a six-month internship with a company in Germany. These internships familiarize our students with the German work culture and improve their language skills.

To help our students acquire an attitude appropriate to industry as well as communicative skills and problem-solving techniques, the EUROTECH program focuses on competence in engineering, foreign language (including technical language) and culture. Students acquire competence in these three areas not only cognitively but also experientially. The usual training in labs and through co-ops reinforces, of course, existing theoretical knowledge. In the EUROTECH program, however, the experiential component goes beyond the conventional curriculum as our students are gradually integrated into the international workplace.6 Our integrative approach helps our students to become self-reliant as they develop various competencies that prepare them to deal creatively with situations that rarely are identical with classroom rehearsals.

We would like to elaborate on these competencies that grow out of a combination of cognitive and experiential learning. In the classroom, students learn general German as well as technical German rather cognitively. In the framework of content-based language instruction, students study grammar and basic vocabulary, including technical glossaries; exercises are designed to generate technical vocabulary. Students read their textbooks and manuals, look at blueprints, and read graphs and tables. From the very beginning of their studies, EUROTECH students are involved in a great number of simple yet meaningful activities that combine German and engineering. Students, for instance, assemble machine tools after rearranging German assembly instructions that were scrambled. It is the students' task to collaborate with German teaching assistants in attaching the right technical term to each part as well as getting the steps of assembly in the right order.

In beginning German classes for EUROTECH participants, we also try to familiarize them with rudimentary ideas in technology and teach them how to describe basic features of machinery or read mathematical terms. Students listen to tapes and watch technical videos. Further into their course work, they write summaries and technical descriptions, focusing on the properties of technical language as it differs from regular German. Students develop various linguistic skills with a focus on those needed in the field of technology.

Experience always figures in learning a foreign language, but EUROTECH tries to maximize authentic input that stimulates students' active linguistic involvement. Regularly working with German-speaking engineering professors, tice their language skills in meaningful contexts. There are, in our opinion, good pedagogical reasons for including, for instance, guest presentations of German-speaking engineering professors even in beginning German classes. Students see and hear engineers from a variety of national backgrounds speak German (with mistakes and accents) as they teach the fundamentals of an engineering topic or review applied mechanics in German. Apart from the fact that the students get an idea of the technical subject at hand, they also learn about the importance of German to the professors' careers. Students come to see them as learners who are encouraged and supported by their foreign language colleagues during the class presentations. The guest presentations illustrate to the EUROTECH students how shortcomings in linguistic competence *(Sprachkenntnis)* may impede the display of technical knowledge *(Fachkenntnis)*. At the same time the presentations and discussions involving UConn engineering professors highlight the productivity of cross-disciplinary cooperation between German and engineering and show foreign language learning as a social experience. Students and German teaching assistants learn in teams as they prepare for these talks; this cooperation intensifies as they prepare for talks by German engineers from industry who contribute to EUROTECH classes in the second and third years of the program.

The classroom extends even further through e-mail dialogues with engineering students in Germany. Working on small projects together with German engineering students and through their e-mail contacts in Germany, EUROTECH participants get to use their general German and technical German in focused practical tasks. Such language learning integrates grammar and vocabulary knowledge, as well as interest in meaningful communication, generating in time linguistic competence that builds on classroom learning but also goes beyond its limitations.

The same combination of cognitive and experiential components prevails in culture instruction. From any currently used college textbooks, students learn about daily life in Germany, German traditions, social stratification, and the arts and sciences. Textbooks present a wide array of *realia* together with the grammar in a given chapter. As is the custom in foreign language education, the instructor brings additional authentic materials to the classroom to provide more vivid illustrations of the cultural topic, including maps, tapes, slides, videos, and even a German news program via satellite. We encourage this acquisition of factual knowledge and enhance the curriculum through materials that document the working world in Germany. For example, we use video tapes from German industry that document professional training in Germany or the daily routines of German engineers and their responsibilities in their workplace.

In the EUROTECH curriculum, however, students are encouraged to go beyond the mere acquisition of such factual knowledge. Isolated sets of facts and discrete cultural events cannot adequately prepare individuals for the unpredictability of real encounters. Through active involvement in cross-cultural communication, we stress students' experiential learning and also inspire self-motivated reflection on differences and similarities between Germany and the US. Interviews of German teaching assistants in engineering are an integral part of learning about language and culture. Through a variety of assignments linked to the topics covered in the German textbook (family, travel and hobbies), our students are to elicit information about the German students' attitudes, values, beliefs and background. In this way, EUROTECH participants have the opportunity to get to know peers whose foreign language proficiency allows them to study and live abroad (role models). As EUROTECH students carry out collaborative projects with these German engineering students, they become aware of cultural differences and learn how to cope with them. The sheltered environment of the program gives our students the opportunity to experiment with their knowledge of culture and discuss their experiences with their German peers.

This aspect of the program becomes increasingly important in the second-year and third-year classes where EUROTECH students meet German engineers from Connecticut industry and discuss issues in technology with them. In a course entitled ***Introduction to the Sciences***, students attend talks given by these engineers on various fundamental issues in the sciences. In the sequence *Fields of Technology*, these talks are continued as the engineers focus on their fields of specialization and their work in their companies. The guest speakers provide our students in advance with a précis of the talk (15-20 minutes long) to familiarize them with the topic, its technical aspects as well as its cultural bearings (an example being the production of catalysts and the environmental regulations in Germany). Detailed glossaries are prepared by the German teaching assistants who come to class a week before the actual guest presentations and explain the terminology and issues at hand in their own words. Experiential learning of this sort allows for a constant application of technical knowledge *(Fachkenntnis)* and foreign language competence *(Sprachkenntnis)*, which is not only challenging but also fun.

These personal encounters as well as field trips to German companies in Connecticut strengthen personal cultural awareness. Guided field trips build on the cultural information students have accumulated and the sensitivity they have developed through their interaction with representatives of the target culture. During these visits (two to three hours each), students encounter all kinds of "German components": they meet German-speaking engineers, see German machine tools, blueprints, correspondence, signs (*Aufschriften*), labels, and bilingual manuals, learn about the company's history through photographs showing parts of Germany, find out about German language classes for the company's employees, and hear the president discuss his need for German-speaking American engineers. The students' "field notes" reflect their particular observations as well as how they value the information they record; their notes become important material for class discussion after the field trip.

As their knowledge of German and engineering increases, the EUROTECH participants return (in teams of two or three) to some of the companies they have visited in order to carry out some specific research projects (mostly in

German), e.g., to conduct interviews with German engineers (or US engineers who were sent to Germany without knowing much or any German) on particular issues that highlight cultural differences. Useful examples are: models of training programs; the German apprenticeship system and its transferability to the US; the work ethic in Germany and in the US; wages; workers' mobility; and the role of labor unions. In their reports back to the class, the students are expected to go beyond descriptions of their findings. They also comment on what they found surprising, strange, enticing or fantastic, and they are asked to give reasons for their reactions. The discussion with their classmates and the German teaching assistants becomes a rich source of cultural information and a mirror of cross-cultural attitudes.

Summer internships with German companies in Connecticut give our students further opportunity to meet with German-speaking engineers, German interns, and other professionals, as well as to learn about the reality of a German company from the inside. EUROTECH participants can not only expand their linguistic and cultural knowledge but also explore culture on their own because we have specifically prepared our students to carry out such explorations. Such skills are very important, as effective communication does not merely consist of exchange of comprehensible verbal messages but also requires of the speaker the ability to create rapport, elicit respect and call forth good will. This necessitates accurate as well as fluent speech supported by the knowledge of the culture and society that a native speaker expects. In this respect, the summer internships and their experiential aspects are critical to the preparation of our students for their six-month internship in Germany. This internship is the cultural and professional centerpiece of our program, and appropriate professional, linguistic, and cultural preparation is vital to its success. Before students leave for their internship, German faculty and German engineers from local industry conduct a three-day orientation workshop. German exchange students who have had a *Praktikum* in industry serve as additional resources.

During their internship abroad, students learn about the foreign culture and actively engage in it, thus integrating purely factual information and cross-cultural experience. The professional experience gained through internships builds on the course work done at the School of Engineering but inevitably goes far beyond academic learning. On a recent study trip with the EUROTECH students to Germany, a tour of the Mercedes plant in Stuttgart made it quite clear that German companies expect interns to know rather precisely what it is that they want to learn during their work period *(Industriesemester)*. It means that our students need to focus on a particular area of their professional interest before they leave for Germany, gather as much information as they can, discuss the ideas or the project with their engineering professors, and then acquire cutting-edge knowledge overseas that should help them submit an exciting capstone project once they are back at the university.

Through the internship, students not only gain technical knowledge but also acquire personal and interpersonal skills. They learn how to function in a team that depends on the creativity, self-reliance, and responsibility of each of professional judgment, a critical perspective on their further training, and adjustment to a different culture. Upon their return from Germany, students work on their senior projects in engineering. Here, they are expected to draw on the cultural and professional experience gained in Germany. EUROTECH participants are obliged to deliver to their peers a lecture about their projects in German. This is not only an occasion to foster team spirit within the program, but it also allows students to demonstrate their communicative abilities, their engineering skills, and their potential for excellence at the workplace. These senior projects are evaluated not only by faculty but also by engineers from Connecticut industry.

Upon completion of their studies and internship, EUROTECH students know a great deal of technical German and the German way of engineering in its specific cultural context. Such professional competence integrates academic knowledge and problem-solving strategies at the workplace. The design of the EUROTECH program at the University of Connecticut emphasizes experiential, reality-based learning to maximize students' communicative competence and cultural awareness. Drawing on external resources and stressing practical experience, the staff of the EUROTECH program ensures that students indeed graduate as self-reliant, creative and culturally proficient engineers likely to match the profile established by American industry. EUROTECH is one way of implementing the suggestions of many American business people and education experts that "we need to borrow a page from the German system and provide the kind of comprehensive, hard-nosed career counseling that exposes our young people to real-world choices and backs it up with accountable job training."[7]

Critical to the success of EUROTECH and any similar educational experiment is the productive collaboration between the university and business—an enterprise that is inevitably labor-intensive and time-consuming but also stimulating and enlightening. Unless faculty members and administrators are willing to reevaluate their curricula, modify their course offerings and graduation requirements, change some of their teaching methods, and institutionalize new programs, it is unlikely that employers will stop being wary of the educational system. All parties involved in EUROTECH have a great deal to gain: the students receive a pragmatic international education preparing them for the global economy of the 21st century; American business can hire young engineers who draw upon solid academic as well as practical training, and who bring communicative abilities, foreign language skills and intercultural awareness to the workplace; and the university— at the levels of both instruction and administration— benefits from the active support of industry that translates into better quality education, increased funds, improved public relations and more international connections.

University of Connecticut

Endnotes

1. "Employers Wary of School System," *New York Times*, February 20, 1995.

2. See brochure on the German dual system of vocational training published by the Carl Duisberg Society International, Inc.

3. Quoted in the above-mentioned brochure of the Carl Duisberg Society International, Inc.

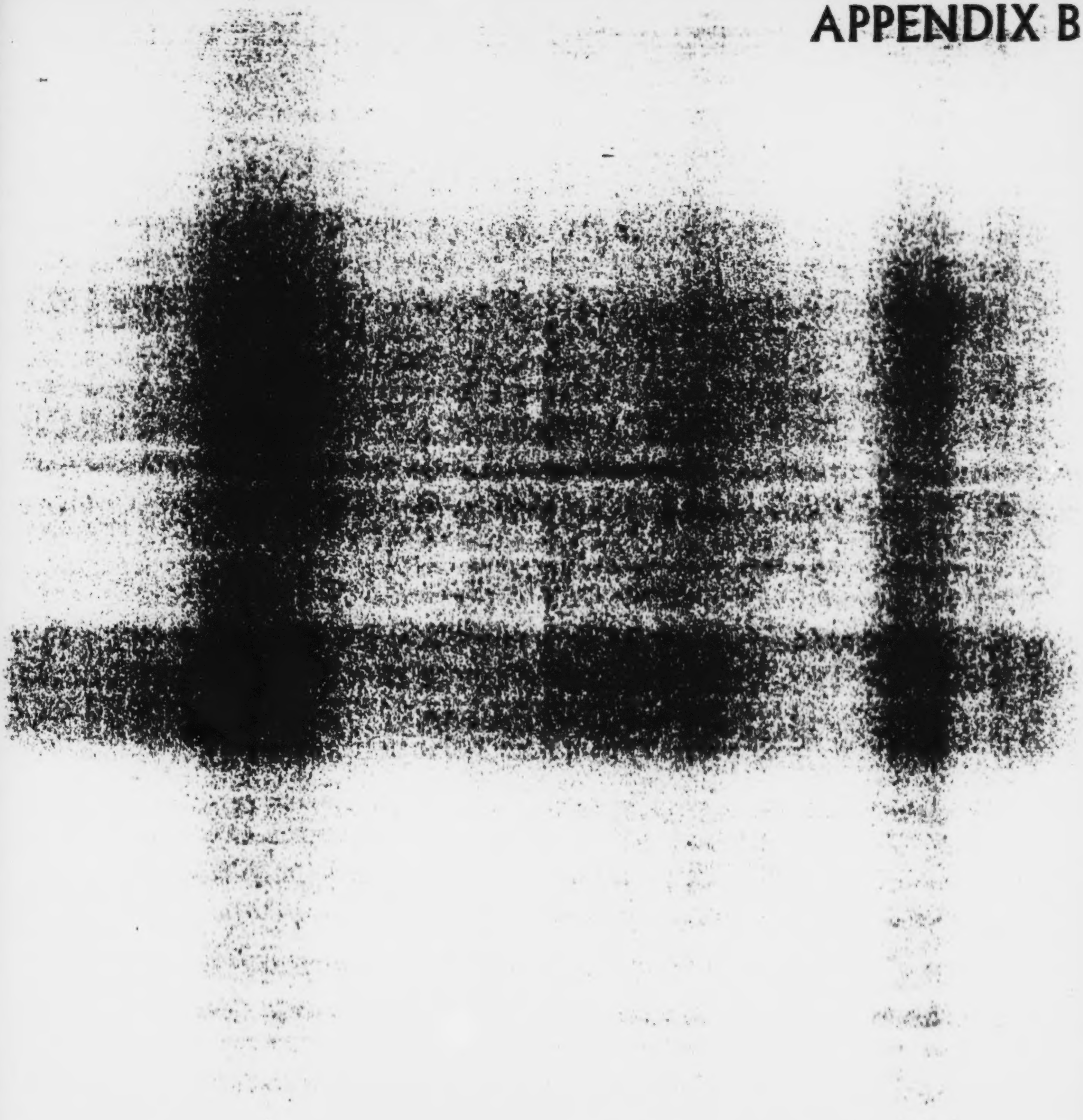
4. In our efforts to set up the EUROTECH program, we received valuable assistance from our colleagues at the University of Rhode Island, where a dual-degree program has been in place for almost a decade. A description of the International Engineering Program at URI, its rationale, and its pedagogical foundation can be found in John Grandin and Candace Einbeck, "German and Engineering: An Overdue Alliance," *Die Unterrichtspraxis* 22.2 (1989): 146-52; and in John Grandin, "Report to the Editor on Second and Third Years of the IEP at the University of Rhode Island," *Die Unterrichtspraxis* 23.2 (1990): 105.

5. The University of Connecticut is by no means the first or only school in the US that offers an international engineering program. There are about a dozen universities across the country that allow engineering students to add an international dimension to their studies (e.g., the University of Rhode Island, the University of Cinncinati, the Colorado School of Mines, Worcester Polytechnical Institute). As far as we know, the EUROTECH program is the most integrative and experientially-oriented dual-degree program consistently linking education in German and engineering.

6. Merely enumerating the courses constituting the EUROTECH curriculum would not illustrate our integrative approach nor the strong experiential component of the program. It should be mentioned, however, that EUROTECH participants have to fulfill the requirements established for German Studies majors on the one hand, and for a particular engineering discipline on the other (e.g., mechanical engineering, computer science, chemical engineering, civil engineering). In order to create and sustain group spirit, EUROTECH students have their own engineering sections of first- and second-year German classes. Furthermore, they have to sign up for a series of specially designed one-hour, one-credit classes that introduce and review essential concepts of engineering and science in German. These "mini-courses" start in the third semester.

7. Carolyn Warner, consultant and former state superintendent of schools in Phoenix, Arizona, in the brochure of the Carl Duisberg Gesellschaft International, Inc.

APPENDIX B



EUROTECH

Samples of Technical Contents included in First Semester German

Instructor: Prof. Terry McCormick

at the University of Connecticut

Fall 1996

DEUTSCH 131: EUROTECH
EINFÜHRUNG

die Zahl -en
die gerade Zahl
die ungerade Zahl
plus
minus
mal
dividiert durch

die Chemie
chemisch
der Chemiker, -
die Chemikerin,-nen
die Verbindung, -en
die chemische Verbindung

das Element,-e
die Tabelle,-n
die periodische Tabelle von Elementen
das Gewicht
das Atomgewicht

CHEMICAL ELEMENTS

Only those elements are listed of which the German name or symbol differs from the English.

Atomic Number (Ordnungszahl)	*English Name*	*German Name*	*German Symbol*
1	Hydrogen	*Wasserstoff*	H
4	Beryllium (Glucinum)	*Beryllium*	Be
5	Boron	*Bor*	B
6	Carbon	*Kohlenstoff*	C
7	Nitrogen	*Stickstoff*	N
8	Oxygen	*Sauerstoff*	O
9	Fluorine	*Fluor*	F
11	Sodium	*Natrium*	Na
14	Silicon	*Silizium*	Si
15	Phosphorus	*Phosphor*	P
16	Sulphur	*Schwefel*	S
17	Chlorine	*Chlor*	Cl
18	Argon	*Argon*	Ar
19	Potassium	*Kalium*	K
20	Calcium	*Kalzium*	Ca
22	Titanium	*Titan*	Ti
24	Chromium	*Chrom*	Cr
25	Manganese	*Mangan*	Mn
26	Iron	*Eisen*	Fe
27	Cobalt	*Kobalt*	Co
29	Copper	*Kupfer*	Cu
30	Zinc	*Zink*	Zn
33	Arsenic	*Arsen*	As
34	Selenium	*Selen*	Se
35	Bromine	*Brom*	Br
40	Zirconium	*Zirkon*	Zr
41	Columbium	*Niobium*	Nb
42	Molybdenum	*Molybdän*	Mo
47	Silver	*Silber*	Ag
50	Tin	*Zinn*	Sn
51	Antimony	*Antimon*	Sb
52	Tellurium	*Tellur*	Te
53	Iodine	*Jod*	J
55	Caesium	*Cäsium* (*Zäsium*)	Cs
57	Lanthanum	*Lanthan*	La
59	Praseodymium	*Praseodym*	Pr
60	Neodymium	*Neodym*	Nd
71	Lutecium	*Lutetium*	Lu
73	Tantalum	*Tantal*	Ta
74	Tungsten	*Wolfram*	W
78	Platinum	*Platin*	Pt
80	Mercury	*Quecksilber*	Hg
82	Lead	*Blei*	Pb
83	Bismuth	*Wismut*	Bi
85	Astatine	*Astaton*	At
86	Radon (Niton)	*Radon Emanation*	Rn (Em)
89	Actinium	*Aktinium*	Ac
92	Uranium	*Uran*	U

eigentümlich, *characteristic, specific;* **die Geschichte,** *history;* **geschichtlich,** *historical;* **gelb,** *yellow;* **gelblich,** *yellowish;* **das Metall, metallähnlich,** *metallic;* **das Eis, eisähnlich,** *icy.*

Form adjectives in **-lich** *and give their meaning:* **befinden,** *to find;* **bekannt,** *known;* **blau,** *blue* (use umlaut); **grün,** *green;* **empfinden,** *to feel;* **erfordern,** *to be necessary;* **die Wissenschaft,** *science;* **der Name,** *name;* **der Tag,** *day* (use umlaut); **das Wesen,** *essence;* **entzünden,** *to ignite.*

(3) *Word group for the verb:* **greifen, griff, gegriffen, er greift,** *to grasp.* **greifbar,** *tangible;* **der Greifzirkel,** *calipers;* **der Griff,** *grip.*

Inseparable verbs and related words: **begreifen,** *to understand;* **der Begriff,** *conception, idea;* **der Mißgriff,** *mistake;* **ergreifen,** *to seize or grasp;* **vergreifen,** *to mistake, to attack.*

Separable verbs and related words: **abgegriffen,** *worn out;* **angreifen,** *to attack, to act on, to affect;* **angreifbar,** *capable of being attacked* (by acids, etc.); **der Angriff,** *attack;* **eingreifen,** *to catch, to lock;* **übergreifen,** *to encroach.*

(4) *Inorganic Nomenclature.* The Principal Oxyacids of Sulfur, Nitrogen, and Phosphorus.

sulfur dioxide	SO_2	Schwefeldioxyd, Schwefligesäureanhydrid
sulfurous acid	H_2SO_3	schweflige Säure, Schwefligesäure
sodium sulfite	Na_2SO_3	Natriumsulfit
sulfur trioxide	SO_3	Schwefeltrioxyd, Schwefelsäureanhydrid
sulfuric acid	H_2SO_4	Schwefelsäure
sodium sulfate	Na_2SO_4	Natriumsulfat
hyposulfurous acid	$H_2S_2O_4$	unterschweflige Säure, monothionige Säure
thiosulfuric acid	$H_2S_2O_3$	Thioschwefelsäure
sodium thiosulfate	$Na_2S_2O_3$	Natriumthiosulfat
pyrosulfuric acid	$H_2S_2O_7$	Pyroschwefelsäure, rauchende Schwefelsäure, Oleum
phosphorous acid	H_3PO_3	phosphorige Säure, Phosphorigesäure
phosphoric acid	H_3PO_4	Phosphorsäure
nitrous acid	HNO_2	salpetrige Säure, Salpetrigesäure
nitric acid	HNO_3	Salpetersäure
hyponitrous acid	$H_2N_2O_2$	untersalpetrige Säure, Untersalpetrigesäure
potassium hyponitrite	$K_2N_2O_2$	Kaliumhyponitrit

DEUTSCH 131: EUROTECH
Kapitel 1: "sein"

Schreiben Sie die richtige Form von dem Verb "sein".

1. Sauerstoff __________ ein Element.

2. Wasserstoff und Kohlenstoff __________ Elemente.

3. Karl, __________ du Chemiker?

4. Nein, ich __________ Ingenieur.

5. Lisa __________ Ingenieurin.

6. Herr Lohmann, __________ Sie Ingenieur?

7. Karl und Lisa, __________ ihr Ingenieure?

8. NaCl (Kochsalz) __________ eine anorganische Verbindung.

9. CO_2(Kohlendioxid) und SO_2(Schwefelsäure) __________ chemische Verbindungen.

10. Wir __________ keine Chemiker. __________ sie Chemiker?

11. Herr Professor, wo __________ das Labor ?

12. Vier Studenten __________ im Labor.

13. Herr Professor, ____________ Sie Ingenieur ?

DEUTSCH 131: EUROTECH
Kapitel 1: Verbalendungen

Schreben Sie die richtige Form von dem Verb!

1. Der Professor ________________ (arbeiten) im Labor.
2. Die Studenten ________________ (suchen) das Labor.
3. Renate __________________ (studieren) Ingenieurwesen an der Universität.
4. Wasser __________________ (sieden) bei 100 Grad Celsius.
5. Wasser __________________ (frieren) bei 0 Grad Celsius.
6. 100 Grad ____________ (sein) der Siedepunkt von Wasser.
7. Karl und Erik, warum ______________ (machen) ihr den Versuch nicht.
8. Dieses Semester _______________ (besuchen) ich einen Chemiekurs.
9. Lisa ________________ (machen) die Analyse.
10. Die Studentin ________________ (suchen) ein Buch in der Bibliothek.
11. Wie ________________ (heißen) diese Verbindung?
12. Die Atmosphäre ______________ (sein) ein Gemisch von Gasen.

DEUTSCH 131: EUROTECH
Kapitel 2: die Elemente

der Stickstoff
der Schwefel
der Kohlenstoff
der Wasserstoff
der Sauerstoff
das Zinn
das Silber
das Eisen
das Uran
das Quecksilber
das Blei
das Sodium
das Kupfer
das Kalium

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das Zeichen – 'symbol'

bezeichnen + acc. 'designate'
für + acc. 'for'

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1. K bezeichnet ____________________.
2. C ist das Zeichen für ______________.
3. H bezeichnet ____________________.
4. Ag ist das Zeichen für ______________
5. Cu bezeichnet ____________________.
6. N ist das Zeichen für ______________.
7. Fe bezeichnet ____________________.
8. U ist das Zeichen für ______________.
9. S bezeichnet ____________________.
10. Na ist das Zeichen für ____________.
11. Pb bezeichnet ____________________.
12. Hg ist das Zeichen für ____________.
13. O bezeichnet ____________________.
14. Sn ist das Zeichen für ____________.

DEUTSCH 131: EUROTECH
Kapitel 2: "Gegenstände im Labor"

Hier sind einige Gegenstände, die man im Labor finden kann:

der Brenner , --	'burner'	das Gefäß, -e	'vessel, container'
der/das Thermometer, --		das Reagensglas, ¨-er	'test tube'
die Luftpumpe, -n	'air pump'	die Waage, -n	'scale'
der Trichter, --	'funnel'	der Zylinder, --	'cylinder'
der Rechner, --	'calculator'		

With each vocabulary word, use the indefinite article "ein-" in the sentences below.

1. Gibt es im Labor ________________?
2. Das ist ______________.
3. Wir suchen ________________.
4. Ich brauche ________________.
5. Wo ist ________________?
6. Wo findet man ______________?
7. Haben Sie ________________?

Deutsch 131: Eurotech
Kapitel 4: "Was ist ein Stoff?"

Wortstudien zum Text.

Was bedeutet das Adjektiv **flüssig** ? : der Fluß 'river'; fließen 'flow'

Was bedeutet das Adjektiv **gasförmig** ? : das Gas 'gas' ; die Form 'form,shape'

Was bedeutet das Verb **nennen** ? : der Name 'name'

Was bedeutet das Verb **verdampfen** ? : der Dampf 'steam"

Was bedeutet das Verb **erhitzen** ? : die Hitze 'heat'

Was bedeutet das Verb **versteinern** ? : der Stein 'stone'

Bilden Sie feminine Substantive in - ung von den folgenden Verben !

verwandeln 'transform'	die Verwandlung 'transformation'
erhitzen 'heat'	______________________
erwärmen 'warm'	______________________
bezeichnen 'designate"	______________________
berühren 'touch'	______________________
schmelzen (i) 'melt'	______________________
verdampfen 'vaporize'	______________________
ab-kühlen 'cool off"	______________________
sammeln 'collect'	______________________

Andere Vokabeln zum Text.

der Stoff,-e	'substance, material'
der Begriff,-e	'concept'
das Gewicht,-e	'weight'
der Zustand,¨-e	'condition, state'
das Beispiel,-e	'example'
zum Beispiel (z.B.)	'for example'
der Würfel,--	'cube, hexahedron'
der Kessel, –	'kettle, retort (chem.)'
der Vorgang,¨-	'process'
der Löffel, --	'spoon'

meinen	'mean, have opinion'
werden zu ____	'turn into'
ein-teilen	'divide (into)'
legen	'lay, place'
dar-stellen	'represent'
statt-finden	'take place'
halten (ä)	'hold'

jed-	'each, every, any'
dies-	'this'
beide(-)	'both'
ander-	'other, different'

alles	'everything'
alles, was	'everything that...'
in diesem Fall	'in this case'
bald	'soon'
dabei	'in so doing' (da-compound)

Was ist ein Stoff ?

Der erste Begriff in der Chemie heißt "Stoffe". Wenn der Chemiker von Stoffen spricht, meint er alles, was Gewicht hat, oder alles, was man sehen oder berühen kann. ?

Physiker und Chemiker teilen den Stoff in drei Gruppen ein: feste Stoffe, flüssige Stoffe, gasförmige Stoffe. Jeder dieser großen Gruppen bezeichnet einen Zustand des Stoffes. Ein Stein ist ein Beispiel für Stoff in festem Zustand. Wasser und Milch stellen Stoffe in flüssigem Zustand dar. Luft ist Stoff in gasförmigem Zustand.

Ein fester Stoff kann sich in die beiden anderen Zustände verwandeln. Man sieht das, zum Beispiel, wenn man zwei oder drei Eiswürfel in einen leeren Wasserkessel legt und den Kessel über einer Flamme erhitzt. Das Eis schmilzt und wird zu Wasser. Dieser Vorgang findet bei 0 Grad Celsius statt, und man nennt diese Temperatur den Schmelzpunkt. In diesem Fall sieht man eine Verwandlung von festem zu flüssigem Zustand.

Wenn man dieses Wasser weiter erhitzt, beginnt das Wasser zu sieden. Wasser wird zu Dampf. Das ist eine Verwandlung von flüssigem zu gasförmigem Zustand. Dieser Vorgang findet bei 100 Grad Celsius statt, und man nennt diese Temperatur den Siedepunkt.

Durch Abkühlung kann man den Wasserdampf zurück in Wasser verwandeln. Wenn man einen Löffel in den Wasserdampf hineinhält, sammelt sich bald wieder Wasser in dem Löffel. Ein gasförmiger Stoff wird dabei zu einem flüssigen Stoff.

Übung 1.

Die folgenden Behauptungen sind alle falsch. Ersetzen Sie das unterstrichene Element, um die Behauptung richtig zu machen !

1. Ein Stein ist ein Beispiel für einen flüssigen Stoff.

   (Wie kann man einen Stein trinken?)

2. Cola ist ein Beispiel für einen gasförmigen Stoff.

   (Cola kann man durch die Nase hineinnehmen, aber das ist keine gute Idee.)

3. Luft ist ein Beispiel für einen festen Stoff.

   (Kann man einen anderen Menchen mit der Luft schlagen ?)

4. Der Schmelzpunkt von Eis ist 100 Grad.

5. Der Siedepunkt von Wasser ist 0 Grad.

6. Bei 100 Grad wird Wasser zu Stein.

7. Bei 0 Grad wird Wasser zu Cola.

8. Wenn man Wasserdampf unter 100 Grad abkühlt, bekommt man Kaffee.

Ubung 2.

Stellen Sie das Modalverb in den Satz hinein, und schreiben Sie den neuen Satz !

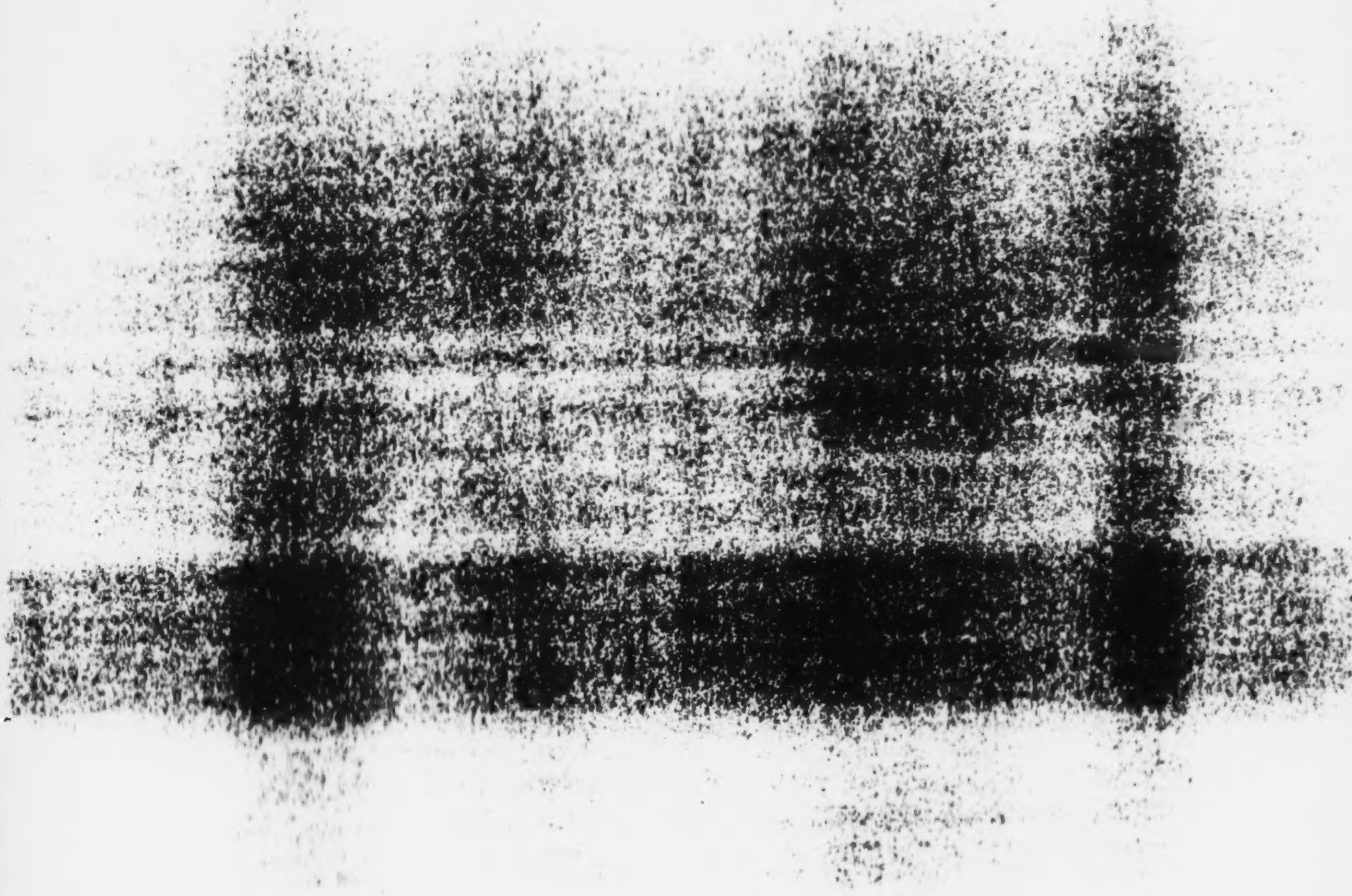
1. Man teilt den Stoff in drei Gruppen ein. (können)
2. Er kühlt den Dampf ab. (müssen)
3. Man hält die Hand nicht im Wasserdampf. (sollen)
4. Verwandelt man einen Stoff von einem Zustand zu einem anderen? (können)
5. Er schmilzt den Stoff. (wollen)
6. Wir sammeln Wasser in dem Löffel. (möchte)

Übung 3.

Nehmen Sie von jedem Satz das Modalverb heraus, und schreiben Sie den neuen Satz!

1. Der Chemiker will von Stoffen sprechen.
2. Eis soll über 0 Grad schmelzen.
3. Man soll die Hand nicht in Wasserdampf halten.
4. Wir möchten Wasserdampf abkühlen.
5. Bei welcher Temperatur soll dieser Vorgang stattfinden?
6. Der Lehrer muß die Klasse in drei Gruppen einteilen.
7. Wie kann man den flüssigen Zustand darstellen?

APPENDIX C



Students may major in Classics, French, German, Italian, Portuguese, Russian, or Spanish or a combination of languages. The department aims to give students a working knowledge of foreign languages for teaching, research, travel, business, diplomatic or governmental work, and for graduate or undergraduate study of the civilization and literature of a foreign country.

All language students (both majors and non-majors) should consider participating in an academic year abroad program. The department conducts programs in Austria, France, Italy, Spain and Germany, sponsors a resident study program in Mexico and offers credit arrangements for study at a Goethe Institute in Germany. Such study normally is most valuable during the junior year, but unusually qualified sophomores and some seniors are also eligible. (The year abroad program in Italy welcomes applications by sophomores, juniors and seniors.) Additional language experience is available through residence in the University's Foreign Language dormitory. Students interested in any of these possibilities should consult early with their advisors.

Courses numbered in the 200's are open to freshmen and sophomores if they meet the prerequisites for the course. In the modern languages, classwork is conducted in the foreign language unless otherwise indicated.

Many courses offered by this department are also applicable toward the B.A. and M.A. in Slavic and East European Area Studies and in Latin American Studies.

Classics

The Classics major permits a variety of options ranging from the traditional language-oriented program to a Classical Studies program. Students electing the major must complete a minimum of 8 courses from the following list, including:

A. At least two courses involving reading in Greek and/or Latin: Classics 207,208, 211, 212, 213, 214, 215, 221, 224, 225, 226, 227, 230, 231, 232, 293,* 298,* 299.*
   *(*May count toward major only with consent of advisor.)*

B. At least one writing course on Classical literature in English: Classics 241W, 242W.

C. At least two other courses dealing with the ancient world (cross-listed under Art History, History, and Philosophy): Classics 251, 252, 253, 254, 255, 256, 257, 293,* 298,* 299.*
   *(*May count toward major only with consent of advisor.)*

French

Students majoring in French must complete the following courses: 210 and 211, 261 and 262, 268, 272 and two from 218, 220, 221, 222, 223, 224, 230, 231, 232, 233, 234, 235 280, 281, and 282. Each major is advised to complete a Senior Seminar. No more than 15 credits earned at Paris may count toward the major.

Study Abroad in France. Students participating in the Paris Program attend the University of Paris III and may earn a full academic year's credit at the University of Connecticut and a maximum of 15 credits toward the major in French. The department encourages interdisciplinary work in this program and wishes students to take non-literary courses whenever possible.

While in Paris, students may take the equivalent of most of the courses offered in the Liberal Arts and Sciences at the University of Connecticut. Please contact the director of the Study Abroad Program or the French Studies Program at 486-3315 or 486-0417 for detailed information.

German

Students majoring in German have a choice between a concentration in German literature or German studies. For the major in literature the following courses are required: 1) 233, 234; 2) three from among the following literature courses: 252, 253, 254, 255, 293 (on a literary topic), 296 (on a literary topic), and 298 (on a literary topic); 3) two from 200, 231, 232, 243, 244, 271, 285, 293 (on a non-literary topic), 296 (on a non-literary topic) and 298 (on a non-literary topic); and 4) one of the following courses taught in English: 251 or 280W. (Only one course taught in English is allowable toward the literature major.)

For the major in German studies the following courses are required: 1) 233, 234, 251; 2) four from 200, 231, 232, 243, 244, 271, 280W, 285, 293 (on a non-literary topic) and 296 (on a non-literary topic) and 298 (on a non-literary topic); 3) one of the following literature courses: 252, 253, 254, 255, 293, (on a literary topic), 296 (on a literary topic) and 298 (on a literary topic). (Only two courses taught in English are allowable toward the German studies major.)

The 12-credit related group requirement may be met by appropriate courses in other foreign languages as well as English, History, Economics, Political Science, and other departments. For students interested in international business, combinations with Marketing or Management courses are also possible.

Eurotech. In collaboration with the School of Engineering, the German Section offers Eurotech, a carefully structured five-year, double-degree program enabling students who have been admitted to the School of Engineering to earn both a B.A. in German and a B.S. in Engineering. The program includes German language courses specially designed to include engineering content, engineering courses partly taught in German, and a six-month internship in a German-speaking company. There is a special emphasis on environmental engineering and pollution prevention. Eurotech students may substitute GERM 220, 221, and 222 for one of the courses in category 3 required of majors in German literature; and for one of the courses in category 2 required of majors in German Studies.

Study Abroad in Austria and Germany. Students are strongly encouraged to spend at least one semester studying in a German-speaking country. The University of Connecticut sponsors a variety of programs in Salzburg, Regensburg and a number of universities in the State of Baden-Württemberg (including a special program in Mannheim) that allow students to select their study abroad according to their own concentration and interests. Students also have the possibility of work-study programs in either Mannheim or Regensburg. For detailed information please see any member of the German faculty.

Italian

Students majoring in Italian must complete a n
mum of 8 courses (the equivalent of 24 credit
be chosen among the following: 237, 238, 239,
243, 244, 245, 246, 247, 249, 250, 251, 252, 253,
254. No more than 15 credits earned in Flor
may count toward the major.

Study Abroad in Italy. Students sh
seriously consider spending a year in Florence
the University of Connecticut "Florence S
Program." Participants in the "Florence S
Program" may earn up to 30 credits during
academic year they spend in Flore
participants register at the Universit
Florence where they may take courses in
discipline. The Program also offers cou
designed exclusively for its participants
taught by Italian professors. No more tha
credits taken in Florence may count towa
major in Italian at this University. For det
information, please see the director of
"Florence Program."

Russian

The Russian major program allows students
mum flexibility in pursuing their academic inte

Students electing Russian as their major
complete a minimum of 8 courses or 24 cred
200 level courses offered in Russian, which
include Russian 221-222, 223-224, 231, 232, an
(Senior Seminar) and an additional 4 courses
credits, all 200-level, of related courses.

Although all students are expected to do
in the areas of language, literature, and civili
and culture, the Russian Studies Program allo
students to place lesser or greater emphasis o
one of these three areas of their concentration
student's program will be planned individu
consultation with the academic advisor.

Russian majors are encouraged to pl
attending an intensive summer program ei
this country or in Russia following eith
sophomore or junior academic year (or foll
successful completion of Russian 158, Russia
or Russian 222).

Russian majors are encouraged to have a
Field of Concentration. Students planning a
in government, commerce, finance and other
fields should acquire a strong background in
the following fields: Business, Econo
Geography, History, Political Science, Sociol
any of the hard sciences. A joint or double
with any one of these fields makes a parti
strong undergraduate program. Stu
considering a double major should consult a
appropriate department.

Students planning to teach at the K-1
should have a second language, preferably t
the third year of study.

Study Abroad in Russia. The Unive
Connecticut sponsors programs in St. Pete
and Novosbirsk. Eligibility requirements
from one to three years of college-level
language study.

Spanish

The "major" program consists of a minim
courses or 24 credits, all 200-level, in Spani
an additional 4 courses or 12 credits, all 2
of related courses.

APPENDIX D

EUROTECH

Samples of Handouts, Assignments, and Tests included in German 220: German Recitation in Applied Mechanics

Instructor: Prof. Herman De Vries

at the University of Connecticut

Fall 1996

German 220 - German Recitation in Applied Mechanics
Fall 1996

As part of the EUROTECH module series (200, 221, 222) this course features four lectures by professors from the School of Engineering. Students build on the technical German acquired in the EUROTECH sections of German 131 and 132 (and 133 which they take concurrently). This one-credit course is offered in conjunction with an Engineering class in vector mechanics.

PREREQUISITES: GERM 132 or equivalent; CE 211 or CE 213 (the latter two may be taken concurrently), or PHYS 151 Q or PHYS 121 Q

INSTRUCTORS: Prof. Roman Solecki (ENG), Prof. Richard Long (ENG), Prof. Herman De Vries (GERM). Teaching Assistants: Martin Geis and Norbert Preis

MEETINGS: Tuesday 11:00 SCTR 193

TEXTS: Texts and assignments will be given on handouts. Reference is made on this syllabus to Ferdinand P. Beer and E. Russell Johnston, Jr. *Vector Mechanics for Engineers* 5th ed. New York: McGraw-Hill, 1988 which you will have already purchased for your engineering course.

OFFICE HOURS: De Vries: Wed. 1:00-3:00 Th: 10:00-12:00

Meeting	**Topic or Lecture**
3. Sept.	Introduction and preview
10. Sept.	**Long: "Vektoren"** – scalars vs. vectors, addition of vectors; cf. Beer / Johnston (14-18[*]) ; equilibrium of a particle (31-32)
17. Sept.	review
24. Sept.	preview
1. Okt.	**Solecki: "Komponenten"** – resolution of a force into components (19), rectangular components of a force (24-25); addition of forces by summing x and y components (26-27).
8. Okt.	review
15. Okt.	**Midterm test** / preview
22. Okt.	**Long: "Starre Körper im Gleichgewicht"** – two and three dimensions; additional vector operations to enhance 3-D components (59-85)
29. Okt.	review

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[*] All parenthetical page references on this syllabus are to Beer / Johnston, *Vector Mechanics for Engineers*, mentioned above.

5. Nov.	preview
12. Nov.	**Solecki: "Balken"** – various types of loading and support (281); shear and bending moment in a beam (282-3); shear and bending moment diagrams (284-5); relation among load, shear, and bending moment (285, 289-90).
19. Nov.	review
26. Nov.	**– keine Deutschstunde** (Friday schedule)
3. Dez.	**student projects** – students will prepare brief presentations based on the course material
10. Dez.	**student projects**
	Final Exam – to be arranged

Grade: Homework and class participation 25%, Midterm 20%, Final 30%, Presentations 25%. All Homework must be turned in on time; late assignments will not be accepted.

Plan to attend the extracurricular activities offered in German when possible. These will include the *Kaffestunde* and German films.

German 220

Wiederholung der Zahlen: Siehe “NA KLAR!” Seite 10 ff.

Mathematische Ausdrücke

=	(ist) gleich	2+3 = 1+4	“zwei plus drei *ist gleich* eins plus vier”
≤	kleiner gleich		
≥	größer gleich		
≠	ungleich	4*5 ≠ 3*4	“vier mal fünf ist *ungleich* drei mal vier”
+	plus	1+3 = 4	“eins plus drei ist gleich vier”
-	minus	7-5 = 2	“sieben minus 5 ist gleich zwei”
*	mal	6*3 = 18	“sechs mal zwei ist gleich achtzehn”
: (/)	durch	24:3 = 8	“vierundzwanzig durch drei ist gleich acht”
(	(runde) Klammer auf		
)	(runde) Klammer zu		
[ ]	eckige Klammern		
{ }	geschweifte Klammern		

Folgende Vokabeln werden im Kurs erklärt:

die Stelle (pl. die Stellen)	______________	das Vorzeichen	_________
einstellig, zweistellig	______________	die Primzahl	_________
eine ganze Zahl	______________	eine Dezimalzahl	_________
das Komma	______________	der Punkt	_________
die natürliche Zahl	______________	die reelle Zahl	_________
gerade	______________	ungerade Zahl	_________

Beantworten Sie die Fragen mit ja oder nein.

1. Die Zahl 43 hat zwei Stellen. ______
2. 2,308 ist eine ganze Zahl. ______
3. 8,64 ist eine Dezimalzahl. ______
4. 7,21 ist keine Dezimalzahl. ______
5. -4 ist eine negative Zahl. ______
6. + 5 hat ein positives Vorzeichen. ______
7. Alle positiven ganzen Zahlen sind natürliche Zahlen. ______
8. Sind positive Dezimalzahlen natürliche Zahlen ? ______
9. Sind negative ganze Zahlen natürliche Zahlen ? ______
10. Sind 35 und 47 gerade Zahlen ? ______
11. Ist 23 eine Primzahl ? _____

Die Grundrechenarten

Addieren und Subtrahieren

Bei der Addition und der Subtraktion algebraischer Summen können Klammern auftreten, wie

z.B. $(7a - 3b) + (5c - 3b - 6a) - (7b - 8a + 2c)$

lies:____

____

Bevor man hier Zusammenfassen und Vereinfachen kann, müssen erst die Klammern beseitigt werden. So wird aus unserem Beispiel:

$$7a - 3b + 5c - 3b - 6a - 7b + 8a - 2c$$

Merke: Steht ein Pluszeichen (+) vor der Klammer, so bleibt die Klammer einfach weg. Steht dagegen ein Minuszeichen davor, so sind beim Weglassen der Klammer alle in ihr vorkommenden Vor- bzw. Rechenzeichen umzukehren.

Multiplizieren

Man multipliziert algebraische Summen miteinander, indem man jedes Glied der einen Summe mit jedem Glied der anderen multipliziert und diese Produkte addiert.

$$(a+b)(c+d) = ac+ad+bc+bd$$

Beispiel:

$$(7u - 3v)(4u + 5v) = 28u^2 + 35uv - 12uv - 15v^2 = 28u^2 + 23uv - 15v^2$$

Das vorangegangene Beispiel beschäftigte sich mit dem sog. *Ausmultiplizieren.*
Das Distributivgesetz $a(b+c) = ab + ac$ kann man aber nicht nur von links nach rechts, sondern auch umgekehrt von der Summe zum Produkt hin anwenden. Dieses Vorgehen bezeichnet man als *Ausklammern.* Wenn mehrere Summanden gleiche Faktoren enthalten, kann der gemeinsame Faktor ausgeklammert werden:

$$44p-77q+99r = 11 * 4p + 11 * 7q + 11 * 9r = 11(4p-7q+9r)$$

BEST COPY AVAILABLE

German 220 / Teampräsentation Gruppe A

Bearbeiten Sie folgende Aufgabe in Ihrer Gruppe und bereiten Sie sie so vor, daß die Lösung in der nächsten EUROTECH-Stunde von Ihnen an der Tafel vorgestellt werden kann.

Aufgabe: **Ein Schwimmer, der mit einer konstanten Geschwindigkeit von 1 m/s schwimmt, möchte einen 30 Meter breiten Fluß durchqueren. Der Fluß fließt mit konstant 9 km/h.**

1.) **Machen Sie eine Skizze für den Fall, daß der Schwimmer direkt auf das andere Ufer (d.h. senkrecht zur Flußrichtung) schwimmt.**

2.) **Wie weit wird er abgetrieben, d.h. wieviele Meter wird er vom Fluß wegbewegt, bis er das andere Ufer erreicht ?**

3.) **In welchem Winkel müßte er schwimmen, damit er das andere Ufer direkt gegenüber erreicht, d.h. damit er vom Fluß nicht in der Flußrichtung wegbewegt wird ? (Skizze !)**

4.) **Wie lange braucht er in diesem Fall um das andere Ufer zu erreichen ?**

Name: ______________

Hausaufgabe 3 / Germ 220

Aufgabe1:

Bitte füllen Sie folgenden Lückentext. Die Wörter finden Sie im Kasten unter dem Text:

1. In einer Funktionsgleichung ist die Variable x unabhängig, aber die Variable y ist ______________ .
2. Der Graph einer linearen Funktion heißt eine ______________ .
3. Ein Koordinatensystem hat zwei ______________ .
4. Die x-Achse heißt auch ______________ .
5. Die Kurve von y = x hoch zwei ist eine ______________ .
6. Ein Punkt im Achsenkreuz hat zwei ______________ .
7. Bei einer Funktion gibt es für jeden Wert für x einen ______________ Wert für y.
8. Die Funktion für eine Parabel hat einen positiven ______________ .
9. Eine Funktion kann man ______________ darstellen.
10. Die Koordinatenachsen treffen sich im ______________.
11. Bei der Addition ist die ______________ der Operationen egal.
12. Die Zahl 8 ist eine ______________ und eine ______________ Zahl.
13. Die Quadratwurzel von zwei ist eine ______________ Zahl.
14. Die Zahl 5 ist eine ______________ Zahl.

graphisch Abszisse Gerade Reihenfolge Koordinaten

Nullpunkt abhängig Exponenten ganze Achsen

reelle eindeutigen natürliche Parabel ungerade

ALSO DANN, MÄNNER! DIE STERNE WARTEN SCHON! DIESE REISE WIRD DIE FORTSETZUNG IHRER GROSSARTIGEN WELTRAUMABENTEUER DER VERGANGENHEIT SEIN! ... ALLERDINGS IST UNSER ETAT ETWAS GEKÜRZT WORDEN!
10-9-8-7-
OTTI II

Aufgabe 2:
Ordnen sie die Sätze richtig zu und bilden Sie vollständige Sätze mit "wenn":

1. Eine Zahl a ist eine Primzahl.
2. Eine Zahl ist eine gerade Zahl.
3. Eine Zahl ist negativ.
4. Eine Zahl ist dreistellig.
5. Ein Produkt ist negativ.

6. Eine Zahl ist endlich.

a. Die Zahl hat 2 als Faktor.
b. Sie hat nicht unendlich viele Stellen.
c. Die Zahl hat drei Stellen.
d. Sie hat nur 1 und a als Faktoren.
e. Eine ungerade Zahl der Faktoren ist negativ.
f. Die Zahl hat drei Stellen.

1. Beispiel: Eine Zahl a ist eine Primzahl, wenn sie nur 1 und a als Faktoren hat.
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________

Aufgabe 3:

Beantworten Sie die Fragen mit dem jeweils richtigen Satz, den Sie unten auswählen.

1. Was ist das Gegenteil der Multiplikation ?

2. Warum kann man π nicht als Dezimalzahl schreiben?

3. Wie erkennt man Kräfte? Kann man Kräfte sehen?

Mögliche Antworten: +++An den sichtbaren Pfeilen kann man Kräfte erkennen.+++π ist eine natürliche Zahl.+++Kräfte erkennt man nur an ihren Wirkungen, da Kräfte selbst unsichtbar sind.+++Die Subtraktion ist das Gegenteil der Multiplikation.+++Weil π eine reelle Zahl ist.+++Die Umkehrung der Multiplikation ist die Division.+++

Dienstag, 22. Oktober 1996

Hausaufgabe 6 / GERM 220

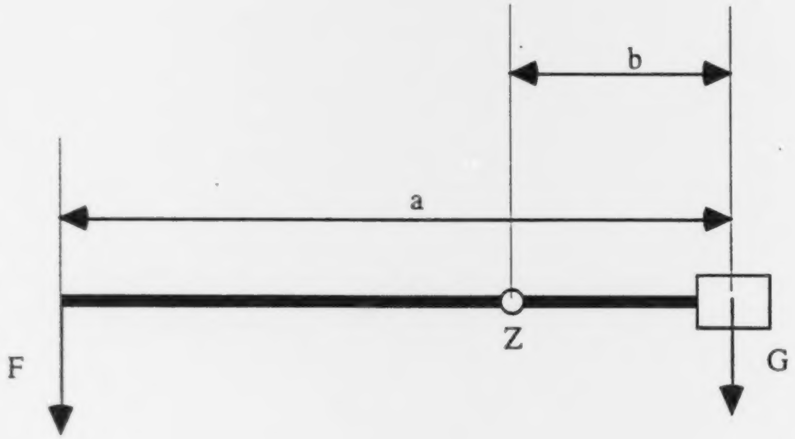
1.) Vervollständigen Sie den folgenden Lückentext, indem sie folgende Wörter richtig einsetzen:

lotrecht, die, den, in, des, das, von Momenten, den Drehsinn

Man kann Kräfte ____ Komponenten zerlegen. Für diese Zerlegung verwendet man ____ Parallelogrammprinzip. Man kann Kräfte , ____ an dem gleichen Punkt angreifen, addieren. Kräftepaare, die an unterschiedlichen Punkten _________ Körpers angreifen, versuchen ____ Körper zu drehen, sie erzeugen ein Drehmoment.
Momente sind freie Vektoren, deren Richtungen _______________ zur Ebene verlaufen. Momente können wie Skalare addiert werden, man muß aber ______________ beachten. Bei der Berechnung _______________ im Raum, ist es ratsam das Vektorprodukt zu benutzen.

2.) a.) **Berechnen Sie die Kraft F, die nötig ist, den Balken in der waagrechten Position zu halten. (b=6 cm, a = 18 cm, G = 100 N).**
[Großbuchstaben sind Vektoren]

b.) **Beschreiben Sie Ihre Rechenschritte in Worten.**



Name: ____________________

Midterm 220 / Fall 1996

I. Diktat

Schreiben Sie bitte die gesprochenen Gleichungen auf. (5 Minuten)

1. ____

2. ____

3. ____

II. Geometrie

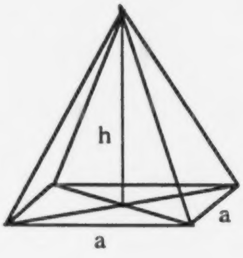
1. Zeichnen Sie folgende geometrische Objekte : (10 Minuten)

ein **Dreieck**
und geben Sie den
Flächeninhalt an

einen **Würfel**
und geben Sie die
Oberfläche an

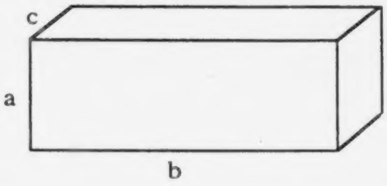
einen **Kegel**
und geben Sie
das ***Volumen*** an

2. Lösen Sie folgende Aufgaben. (10 Minuten)



Wie nennt man diesen Körper ?

a = 12 cm, h = 17 cm
Wie groß ist das Volumen ?



Wie nennt man diesen Körper ?

a = 2 cm, b = 3a, c = 3cm
Wie groß ist die Oberfläche ?

EUROTECH

Samples of Handouts, Assignments, and Tests included in German 221: Introduction to the Sciences

Instructor: Prof. Herman De Vries

at the University of Connecticut

Spring 1996

Syllabus for **GERM 221: Introduction to the Sciences**
Spring 1996

Students will build on GERM 133 (which may be taken concurrently) as they apply their language skills to the exploration of basic issues in technology. This course is also open to anybody from the sciences meeting the language requirements. Every student is expected to discuss general topics and their projects with the assistants on a regular basis (3 meetings per semester, each at least at 15 minutes) to help with the project and improve oral skills.

Instructor: Herman De Vries (GERM), tel.486-3963
office hours: AJH 120,Th 1:30-3:30, Fri. 10:00-12:00 or by appointment

teaching assistants: Roman Drahtmüller, Andreas Grüner, tel 486-3963
office hours: AJH 120, to be announced

Meetings: weekly, TUE, 4 pm in JHA 136, presentations in Castleman, conferenceroom 306

Week / Date	
I. / 31 Jan.	Introduction / preview
II. / 6 Feb.	Wolfgang Bürmann (University of Connecticut, Physics): "Röntgenstrahlen in der Umweltanalytik"
III. / 13 Feb.	review
IV. / 20 Feb.	preview
V. / 27 Feb	Prof. Uwe Koehn (University of Connecticut, Statistics): "Kontrollkarten"
VI. / 5 March	review / preview
VII. / 12 March	**Midterm**
SPRING BREAK	
VIII. / 26 March	Wilfried Meier (Sikorsky Aircraft): "Hubschrauber"
IX. / 2 April	review
X. / 9 April	preview
XI. / 16 April	Klaus Voos (Index Corporation): "Die Entwicklung der Drehautomaten und der heutige Stand der Technik computergesteuerter Drehautomaten"
XII. / 23 April	review / **Projects**
XIII. / 30 April	**Projects** / general review
XIV. / 7 May	**Final Examination**

Students in this course are encouraged to participate in the field trips to CT companies.

Grade: Midterm 20%, Final 30%, project 20%, homework/participation/ small presentations 30%. Homework is especially important since here students will learn how to deal with texts and technical problems in the target language. The course also involves regular presentations of small assignments in class. Absolutely all homework has to be done on time since it is an essential part of the preparation for upcoming engineering talks. *Please also attend the Kaffeestunde, where you can practice your German. There are also regular showings of German movies.*

Hausaufgabe 2 / GERM 221

1.) **Formen Sie einen kleinen Text, der aus den nachfolgenden Wörtern besteht! Die Wörter müssen nicht in derselben Reihenfolge wie unten verwendet werden. Achten Sie dabei darauf, daß Sie die Nomen und Verben in der richtigen Form einsetzen.**

das Wissen, die Verantwortung, forschen, das radioaktive Element, der Gehalt, messen, trocknen, der Halbleiter, die Probe, der Detektor, proportional, die Energie, der Stromfluß, die Kontamination, der Strahlenschutz.

12. März 1996

Midterm Exam

(GERM 221)

Gesamtpunktzahl: 130 Punkte.

Name:..

A. Hörverständnis (20 Punkte):
Bitte notieren Sie die beiden mathematische Formeln, die Ihnen diktiert werden. Schreiben Sie sie nicht in Worten, sondern in Symbolen!

1. ____

2. ____

B. Vokabeln:
1. Geben Sie jeweils das deutsche Wort an. Achten Sie auf das richtige Geschlecht (20 Punkte).

1. semiconductor ______________________
2. random variable ______________________
3. decay ______________________
4. sample, test sample ______________________
5. length ______________________
6. law ______________________
7. characteristic ______________________
8. mushroom ______________________
9. small contamination ______________________
10. deciduous trees ______________________

2. Übersetzen Sie das Unterstrichene in diesen Auszügen der Gastvorträge (15 Punkte).

1. Die geringe Tiefenverlagerung des Cs im Fichtenwald . . .

   ____

2. An den Halbleiter wird ein Hochspannung angelegt . . .

   ____

3. Wenn die Mittelwerte von zwei nacheinander folgenden Stichproben außerhalb der Warngrenzen liegen, wird vermutet, der Prozeß sei außer Kontrolle . . .

   ____

4. Hierin ist x eine beliebige Abszisse, γ die zugehörige Ordinate (γ ist eine Funktion von x: $\gamma = \gamma(x)$.

   ____

5. Doch neben den politischen und ethischen aufgeworfenen Fragen wurde die Forderung nach einer neueren und besseren Strahlenschutzvorsorge und einem größeren Wissen über Radioaktivität in unserer Umwelt laut.

   ____

C. Lückentext (20 Punkte)
Vervollständigen Sie bitte den folgenden Lückentext mit den darunter stehenden Wörtern!

Die Kernreaktorkatastrophe in Tschernobyl war Ursprung von vielen Forschungsarbeiten rund um die Kernenergie. Es .... sich die Frage, ob Menschen in den Industriestaaten sich weiterhin auf die Kernkraft als sichere Energiequelle verlassen dürfen oder ob in naher Zukunft eine Alternative gefunden werden muß.

Wissenschaftler .... auf der Welt bemühen sich um Erkenntnisse über die Auswirkung von Radioaktivität beziehungsweise von radioaktiven .... auf die Gesundheit von Mensch und Tier. Dazu ist es wichtig, herauszufinden, welchen .... diese Elemente nehmen, also wie sie vom Boden in den Körper des Menschen gelangen können.

Forscher fanden heraus, daß Rehfleisch und Pilze je nach Region und Art des Waldes unterschiedliche Kontamination aufwiesen. In Nadelwald breitete sich zum Beispiel Cäsium erheblich .... in der Pflanze aus als in Laub- oder Mischwald. Das Institut für Radioökologie in Weingarten, ... , macht dafür die Zusammensetzung der oberen .... verantwortlich. In der Folge ging man davon aus, daß Pilze, die in einer .... Beziehung zu den Wurzeln der Pflanzen stehen, bei dem Prozeß des Transports von radioaktiven Elementen in der Pflanze eine wichtige .... spielen.

einzusetzendeWörter:
stellte, Elementen, überall, symbiontischen, Menschen, stärker, Weg, Bodenschichten, Deutschland, Rolle,

D. 1.) Erklären Sie mit mehr als 5 Sätzen (gegebenfalls mit Hilfe einer kleinen Skizze) die Meßapparatur zur Bestimmung der Radioaktivität von Bodenproben (20 Punkte)!

2.) Erklären Sie bitte mit etwa 5 Sätzen, wozu man in der Industrie Wahrscheinlichkeitstheorie braucht! Bitte beschreiben Sie auch kurz ein Beispiel (20 Punkte)!

E. Welcher Vortrag hat Sie am meisten interessiert?
Bitte begründen Sie ihre Meinung mit mehreren Sätzen (15 Punkte).

Wortschatzliste "Drehautomaten: Entwicklung und Stand der Technik"

der Drehautomat	*screw machine (former term), turning automatic*
das Werkstück	*work piece; part*
das Spanabheben	*metal cutting*
die Formgebung	*modeling, forming, design*
die Stange	*rod*
das Spannfutter	*clamping chuck*
benötigen	*to require*
der Reitstock	*carrier, prop*
die Abstützung	*buttress, support*
das Drehteil	*part to be turned*
der Bedarf	*demand*
das Getriebeteil	*transmission part*
spanabgebend	*cutting, metal removing*
metallverarbeitend	*metal-working*
handbedient	*hand-operated*
bestehen aus ...	*to consist of, to be made of*
die Arbeitsspindel	*work spindle*
die Welle	*shaft*
immer seltener	*more and more seldom*
das Rohteil	*raw piece*
die Schraube	*screw*
die Mutter	*nut*
kostengünstig	*inexpensive*
der Werkstoff	*material*
selbsttätig	*self-instructed*
der Bewegungsantrieb	*propulsion*
die Spindel	*spindle*
die Trommelschaltung	*indexing drum*
die Kurve	*curve*
der Nocken	*cam*
die Nockenwelle	*cam shaft*

der Achsantrieb	*axle drive*
der Schlitten	*slide*
der Drehmelder	*(turn)(or: synchro) resolver*
der Regelkreis	*control system*
geradlinig	*linear*
das Gewinde	*(screw) thread*
gewährleisten	*to guarantee*
die Steigung	*lead, pitch*
strehlen	*to thread, to cut*
stufenlos regelbar	*progressively adjustable*
die Steuerung	*control*
nicht nur...,sondern...	*not only...but also...*
verfahren	*to traverse, to drive*
die Voraussetzung	*prerequirement*
beliebig	*arbitrary*
umrüsten	*to retool*
die Rüstzeit	*change-over time*
spannen	*to clamp*
das Spannsystem	*clamping system*
bestücken	*to equip*
die Bestückung	*equipment*
der Kopiermeißel	*tool*
die Zustellrichtung	*infeed direction*
die Flanke	*flank*
das Drehzentrum	*turning center*
ursprünglich	*originally*
der Bewegungsablauf	*movement cycle*
beeinflussen	*to influence*
der Wohlstand	*wealth, prosperity*
sich eröffnen	*to open up*

German 221 / EUROTECH
Final Exam
Spring 1996

Name ___________________________

A. Zum Vortrag: “Die Entwicklung und der heutige Stand des Drehautomaten”

I. Vokabeln und Inhalt. Wählen Sie das richtige Wort für die Lücke.

1. An der handbedienten Drehmaschine befindet sich auf der Z-Achse ______________

    a. der Querschlitten
    b. der Längschlitten

2. An der handbedienten Drehmaschine befindet sich auf der X-Achse ______________

    a. der Querschlitten
    b. der Längschlitten

3. Es nennt sich __________________, wenn sich die Spindeltrommel dreht.

    a. Trommelschleuderung
    b. Trommelschaltung
    c. Trommelspinnen

4. Ein großer Vorteil von CNC Maschinen ist, daß große ___________ in kurzer Zeit hergestellt werden können.
    a. Nummer
    b. Stückzahl
    c. Menge

5. Bevor ein Werkstück bearbeitet werden kann, muß eine CNC Maschine ____________ werden.
    a. eingestellt
    b. aufgerichtet
    c. eingerichtet

6. Der Begriff “____________________” rührt daher, daß das Bearbeitungsprogram zur Steuerung aller Bewegungen und sonstiger Maschinenfunktionen in Form von Zahlen (lateinisch Nummerus) und Buchstaben eingegeben wird.

    a. Koordinieren
    b. Programieren
    c. numerische Steuerung

II. Andere Fragen bzw. Aufgaben.

1. Der klassische Drehautomat wurde um 1870 in Connecticut entwickelt, um kleinere Rohteile wie z.B. ____________________ und ______________________, die in großen Stückzahlen verwendet wurden, schnell und kostengünstig herzustellen.

2. Ein Terminus, der synonym mit Werkzeugrevolver ist, heißt: ______________________

3. Schreiben Sie den folgenden Satz mit einem Relativsatz:
Die auf der Kurvenwelle befestigte Kurve führt eine Umdrehung pro Werkstück aus.

Die Kurve, ____

____.

III. Vokabeln: Finden Sie das richtige englische Wort aus dem unten stehenenden Kasten.

1. die Mutter ______________________________
2. das Gewinde ______________________________
3. der Reitstock ______________________________
4. strehlen ______________________________
5. beliebig ______________________________
6. geradlinig ______________________________
7. die Zustellrichtung ______________________________
8. die Voraussetzung ______________________________
9. die Schraube ______________________________
10. der Bewegungsantrieb ______________________________

to thread, cut
arbitrary
carrier; prop
linear
screw
prerequisite
nut
propulsion
(screw) thread
infeed direction

B. Zum Text "Hubschrauber"

I. Vokabeln und Inhalt. Wählen Sie das richtige Wort für die Lücke.

1. Leonardo Da Vinci wußte offenbar, daß Fliegen auf dem Prinzip ________________ von Luft basiert, lange bevor die meisten Leute wußten, was Luft ist.

a. der Einnahme
b. der Verdrängung
c. des Schiebens

2. Die bewaffneten Streitkräfte haben die größten ________________ von Hubschraubern.

a. Mengen
b. Zahlen
c. Flotten

3. Für Personaltransport zu ________________ im Ozean ist der Hubschrauber das einzig richtige Verkehrsmittel.

a. Ölplattformen
b. Lady Liberty
c. Inseln

4. Hubschrauber können am meisten profitieren von Technologien, die zu ____________, niedrigerem Treibstoffverbrauch und reduziertem Unterhalt führen.

a. Gewichtsvermehrung
b. Gewichtsausgleich
c. Gewichtsverminderung

5. Die Herstellungskosten für einen Hubschrauber sind sind etwa ________________ wie für ein gleich schweres Flugzeug..

a. das Doppelte
b. das Vierfache
c. die Hälfte

6. Die Anzahl der Leute, die vollzeitig in der Hubschrauberindustrie beschäftigt sind, wird auf ____________________Personen geschätzt.

a. 125.000 -150.000
b. 60.000 - 80.000
c. 40.000 - 60.000

II. Kurze Antworten.

1. Wie heißt der nach den Vereinigten Staaten ausgewanderte Erfinder des Hubschraubers?

2. Wie nennt sich die Wärmekraftmaschine, die in den 1950er Jahren den schweren Kolbenmotor nahezu verdrängte?

3. Geben Sie bitte jeweils ein Beispiel von einer Anwendung des Hubschraubers (a) im militärischen Gebrauch und (b) im zivilen Gebrauch.

a.

b.

4. "Der Hubschrauber repräsentiert eine Reihe von Kompromissen." Geben Sie ein Beispiel von einem Kompromiß.

III. Lückentext. Füllen Sie die Lücken im Text mit den unten im Kasten stehenden Wörtern.

Die Firma Boeing Vertol baut Tandem Rotor Hubschrauber, bei dem zwei Hauptrotoren gegenläufig ______________ und so ihre Drehmomente ____________________, was bessere Schwebeleistung erlaubt. Die Firmen Bell und Vertol ______________ zusammen ein konvertibles Konzept. Ein starrer Flügel ______________ den Auftrieb im Vorwärtsflug; zwei Rotoren sind an den Flügelspitzen installiert, senkrecht gestellt im Schwebeflug, und nach vorne _____________, um Schub zu produzieren für den Vorwärtsflug.

gekippt	kompensieren	rotieren	liefert	entwickeln

C. Individueller Teil – Vokabeln

Brian Schwegler – Thema: Luftfahrt

I. Geben Sie jeweils das deutsche Wort an.

1. wing ______________________________

2. wheel ______________________________

3. throttle lever ______________________________

4. magnetic compass ______________________________

5. tachometer ______________________________

6. directional gyro ______________________________

7. lateral axis ______________________________

8. vertical axis ______________________________

9. cockpit ______________________________

10. instrument panel ______________________________

II. Andere Fragen.

1. Nennen Sie die vier Kräfte, die auf ein Flugzeug wirken.

2. Warum haben Sie dieses Thema für Ihr Projekt gewählt?

EUROTECH

Samples of Handouts, Assignments, and Tests included in German 222: Fields of Technology

Instructor: Prof. Herman De Vries

at the University of Connecticut

Fall 1996

German 222 – Fields of Technology

This is the third course in the EUROTECH module (one-credit) series. It is taken contemporaneously with Germ 233, Advanced Language Skills, and conducted in German. Germ 222 features four lectures from German-speaking engineers or scientists from industry or the academe who will speak on topics pertaining to your training and careers as engineers.

The goals of this course are twofold. First, you will acquire the necessary vocabulary and knowledge related to the speakers' lectures, so that you can understand the presentation and contribute intelligently to a discussion on the subject. Second, during the course of the semester, you will develop a presentation on a topic of your choice. Using the experience gained in audience of four lectures, you can refine your own presentation style and technique.

PREREQUISITES: GERM 220, 221

INSTRUCTOR: Prof. Herman De Vries

TEACHING ASSISTANTS: Martin Geis, Norbert Preis

MEETINGS: Tuesday 4:00 JHA 211. Guest lecture sessions are held in Castleman 306

OFFICE HOURS: Wed. 1:00-3:00; Th. 10:00-12:00, or by appointment

Your grade in this course will be based on the following:

Regular homework assignments	25%
Participation during guest lectures	15%
Your individual presentation	30%
Midterm and Final	30%

German 222 – Fields of Technology (1996)

SYLLABUS

3. Sept.	Introduction and review exercises
10. Sept.	assignment due from Hypertext “Otto Motor” / preview of lecture
17. Sept.	**Dr.-Ing. Axel Krebs** (Postdoc, UConn):
24. Sept.	review of lecture / have selected presentation topic
1. Okt.	preview
8. Okt.	**Prof. Dr. R. Coughlin** (Chemical Engineering, UConn): **“Chemische Reaktionen”**
15. Okt.	review
22. Okt.	preview
29. Okt.	**Kai Schüler** (MAN Roland)
5. Nov.	review **Due:** draft of presentation
12. Nov.	preview
19. Nov.	Guest lecture: **Prof. Dr. Nejat Olgac** (UConn Mechanical Engineering): **“Schwingungs unterdrückungsmethode mittels ‘Delayed-Resonator’”** **Due:** English/German glossary for your presentation
26. Nov.	– keine Deutschstunde (Friday schedule)
3. Dez.	**Student presentations**
10. Dez.	**Student presentations**

Student Presentations - December 3 and 10

At the end of the semester you will deliver a talk on an engineering topic of your choice. The purpose of this talk is for you to increase your level of German proficiency with respect to a specific topic in your field. You will decide on your topic by the fourth week of the semester (24 September).

This assignment involves several components:

- **Preperatory material.** By Nov. 19 provide a necessary German-English glossary of important vocabulary. Prepare also three questions that are formulated so as to stimulate appropriate thinking on your subject.

- **Written text.** This text will serve as the base of your talk. A draft version should be handed in by Nov. 5. The EUROTECH assistants will be available to help you with your technical writing throghout the semester. The text must be at least 3 pages, double spaced.

- **Presentation**. Prepare to speak for 12-15 minutes. You may use prepared notes, but you should not read directly from your prepared text. This will be followed by a 10 minute question / answer period.

Eurotech- German 222 - Fields of Technology

(3. September 1996 - Introduction)

1. Vorstellungsrunde:

Im ersten Teil der heutigen Stunde wollen wir uns zuerst einmal kennenlernen. Es soll sich aber nicht jeder selbst vorstellen, sondern wir wollen uns gegenseitig vorstellen.
Wir unterhalten uns paarweise und versuchen so etwas über den Gesprächspartner zu erfahren. Hierbei interessieren uns natürlich vor allem die ingenieurwissenschaftlichen Hintergründe. Nach rund 10 Minuten kommt dann die Vorstellungsrunde...

2. Vorstellungsgespräch:

Mit Ihren guten Deutschkenntnissen möchten Sie natürlich auch einmal bei einer deutschen Firma Praktikum machen. Da der Personalchef von Ihrer Bewerbung- und vor allem von Ihrem Eurotechstudium - überzeugt ist, werden Sie zum Vorstellungsgespräch eingeladen.

Aufgabe: Überlegen Sie sich kurz eine deutsche Firma, bei der Sie ein technisches Praktikum machen wollen und überzeugen Sie den Personalchef davon, daß Sie die richtige Frau bzw. der richtige Mann sind.

Viel Erfolg !

Eurotech - German 222

Vokabelquiz zum Vortrag von Dr.-Ing Axel B. Krebs über die

"Erfüllung von Grenzwerten bei PKW - Dieselmotoren"

Aufgabe: **Bitte ordnen Sie dem deutschen Fachwort die zugehörige englische Übersetzung zu (Zahl und Buchstabe).**

	Deutsch			**Englisch**
1.	Abgasnachbehandlung	___	a.	decrease in emission
2.	Gesetzgebung	___	b.	mature for start of a series
3.	Grenzwert	___	c.	soot particulate
4.	Emissionsverminderung	___	d.	exhaust-aftertreatment
5.	Abstimmung	___	e.	service condition
6.	Serienreife	___	f.	legislation
7.	Regelungsaufwand	___	g.	melting temperature
8.	Schalldämpfer	___	h.	adjustment
9.	Oberfläche	___	i.	surface
10.	Rußpartikel	___	j.	storage device
11.	Speichersystem	___	k.	cooling down
12.	Schmelztemperatur	___	l.	limit
13.	Einsatzbedingung	___	m.	noise reduction
14.	Geräuschminderung	___	n.	muffler
15.	Abkühlung	___	o.	effort for control devices

bitte wenden !

Name:____________________

Hausaufgabe 4 zu German 222
Chemie

Beantworten Sie die folgenden Fragen bitte kurz mit **vollständigen** (deutschen) Sätzen.

Vortrags- und laborbezogene Fragen:

1.) **Was passiert, wenn man auf einem Stück Brot längere Zeit kaut ? Welche Reaktionen laufen ab ?**

2.) **Im Labor gibt es eine Reihe von Sicherheitsmaßnahmen. Erklären Sie den Sinn von *Schutzbrille*, *weißem Kittel*, *Handschuhen*, *Abzug*, *Not-Aus-Knöpfen*, *Feuerlöscher* und *Sprinkleranlage* .**

Allgemeine Fragen:

3.) **Was ist NaCl ?**

3.) **Woraus besteht ein Diamant ? Wo werden Diamanten verwendet ?**

German 222 / Hausaufgabe 5

Aufsatz: Stellen Sie sich folgende Situation vor:

Wir schreiben das Jahr 2010. Sie sind seit vielen Jahren erfolgreich in ihrem Beruf tätig. Aber wie hat sich das ganze technologische Umfeld im Gegensatz zu heute verändert ?

Schreiben Sie auf diesem Blatt und der Rückseite einen Aufsatz, wie ein typischer Tag in Ihrem Leben ablaufen könnte. Berücksichtigen Sie Dinge wie Haushaltsgeräte, Energieversorgung, Kommunikationselektronik, Verkehrsmittel, Arbeitsplatz, aber auch Freizeitmöglichkeiten.

German 222 - Fields of Technology

Midterm - Chemie - Kurzvorträge

Thema: “Die Sprache der Chemie”

Aufgabe: Bereiten Sie für den 15. Oktober 1996 einen ca. 8-10 minütigen Kurzvortrag über dieses Thema vor.
Eine schriftliche Ausarbeitung wird nicht erwartet.

Als Material sollten die beigefügten Seiten 10 - 14 aus Tessloff, WAS IST WAS ausreichen.
Weitere Literatur muß nicht beschafft werden.

Stellen Sie den Stoff lebendig dar, so daß der interessierte Zuhörer “seinen Horizont erweitern kann”.

Sie müssen auch nicht alle Inhalte behandeln, sondern es können Schwerpunkte gesetzt werden.

Bei Ihrem Thema bieten sich folgende Schwerpunkte an:
- Aggregatzustände
- Die Elemente nach Empedokles
- Woraus besteht der Mensch ?
- (Abkürzungen für) die chemischen Elemente

Ein Tageslichtprojektor steht Ihnen zur Verfügung.
Projektionsfolienkopien aus dem Buch können Sie bekommen.

Bei Fragen stehen Professor DeVries und ich (Martin, Tel:7-6813) gerne zur Verfügung.

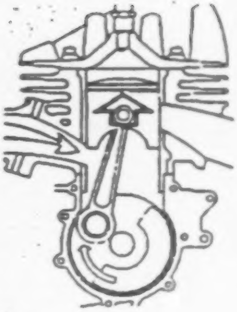
Viel Spaß und Erfolg bei der Vorbereitung.

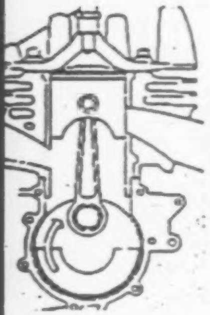
Wir freuen uns auf Ihren Midterm-Kurz-Vortrag !

Zwei- oder Viertakter?

Beim Motorrad hat der Zweitakter bisher überlebt, obwohl er auch bei kleinen Hubräumen immer mehr vom umweltfreundlicheren Viertakter bedrängt wird.

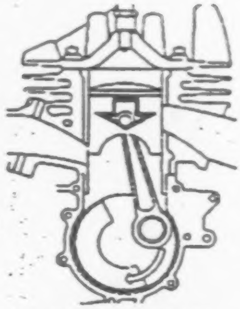
dichten und ansaugen: rdichten im Brennraum d ansaugen n Frischgas den Kurbelkasten

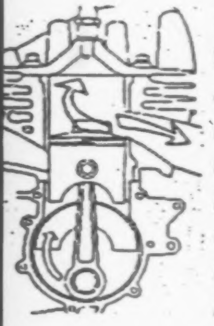




Kolben in OT: Das Kraftstoff-/Luft-Gemisch wird gezündet

itshub: Das Gemisch im belgehäuse wird vorverdichtet





Vorverdichtetes Gemisch aus dem Kurbelkasten strömt durch Kanäle in den Brennraum und spült das Abgas raus

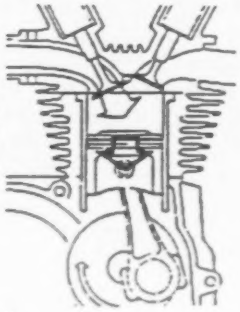
Aus einem halben Liter Hubraum lassen sich beim Zweitakter durchaus 160 PS herauskitzeln. Bei dieser hohen Leistungsdichte hinken Viertakter hoffnungslos hinterher, weshalb sportliche Zweiräder oft auf die Leistung aus zwei Arbeitstakten bauen.

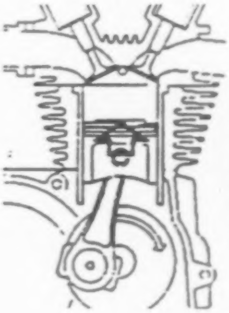
Der Zweitaktmotor hat noch weitere Vorteile: Dank einfacher Bauweise kommt er in der Regel mit nur drei bewegten Bauteilen aus (Kolben, Pleuel und Kurbelwelle). Durch den Verzicht auf einen Ventiltrieb ist er kompakter, leichter und preiswerter zu fertigen. Damit ist er auch als Antrieb für einfache Zweiräder interessant.

Denn in Sachen Verbrauch und Umwelt hat der Viertakter klar die Nase vorn. Ventile in seinem Kopf trennen das frische Kraftstoff/Luft-Gemisch vom Abgas. Sogenannte Spülverluste wie beim Zweitakter, bei dem immer auch unverbranntes Gemisch durch den Auspuff entweicht, kennt er fast nicht. Diese Spülverluste verleihen dem Zweitakter seine unverwechselbare, graublaue Abgasfahne und steigern den Verbrauch.

Je nach Philosophie vertrauen Hersteller und Fahrer auf den sportlichen Zweitakter oder den umweltfreundlicheren Viertaktmotor. ☐

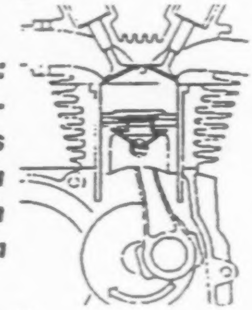
Ansaugtakt: Das Ventil für den Einlaß ist geöffnet

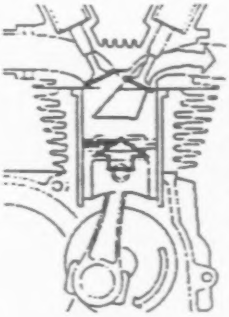




Verdichtungstakt: Ein- und Auslaß-Ventile sind geschlossen

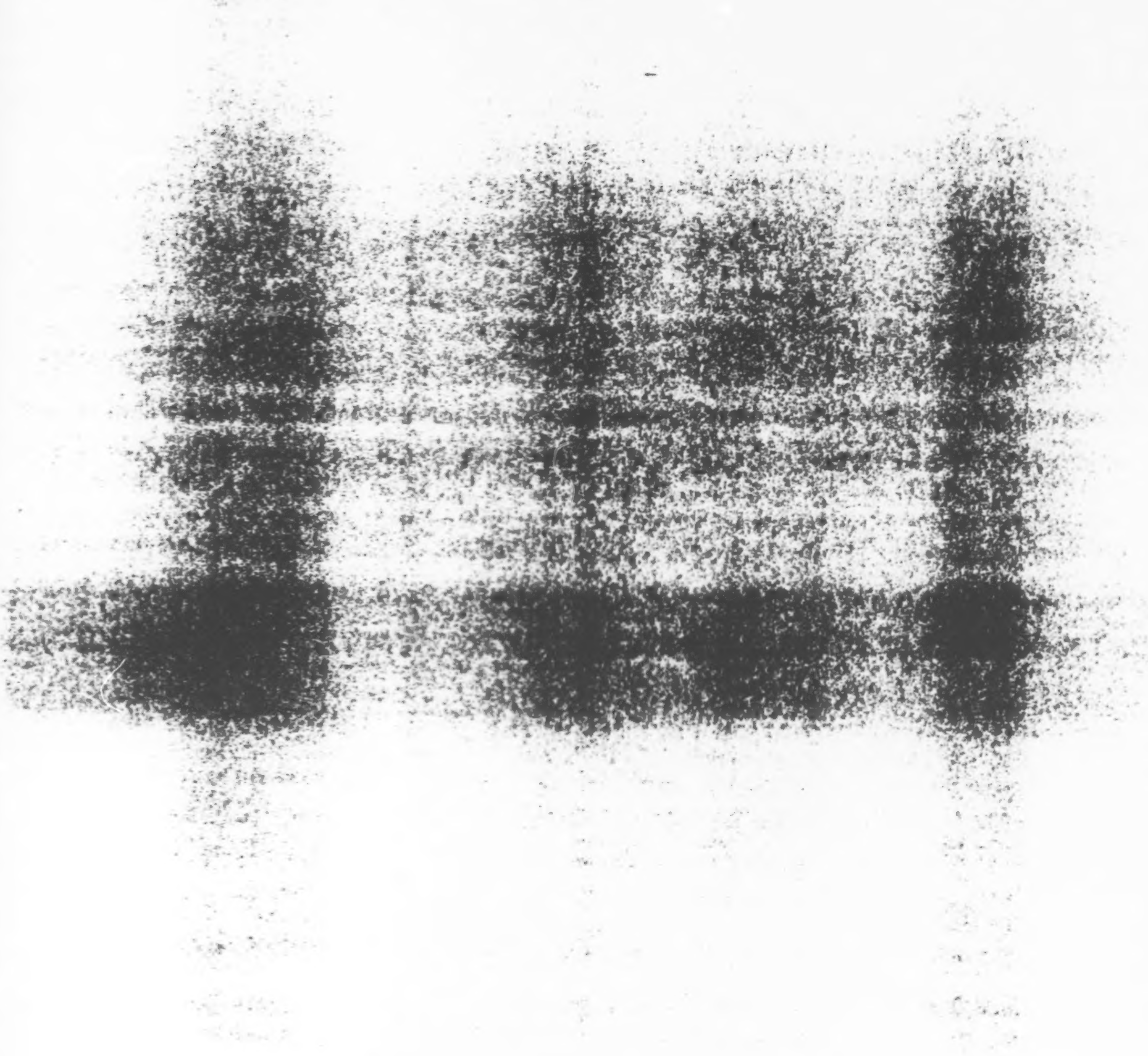
Arbeitstakt: Das verbrennende Gas drückt den Kolben nach unten

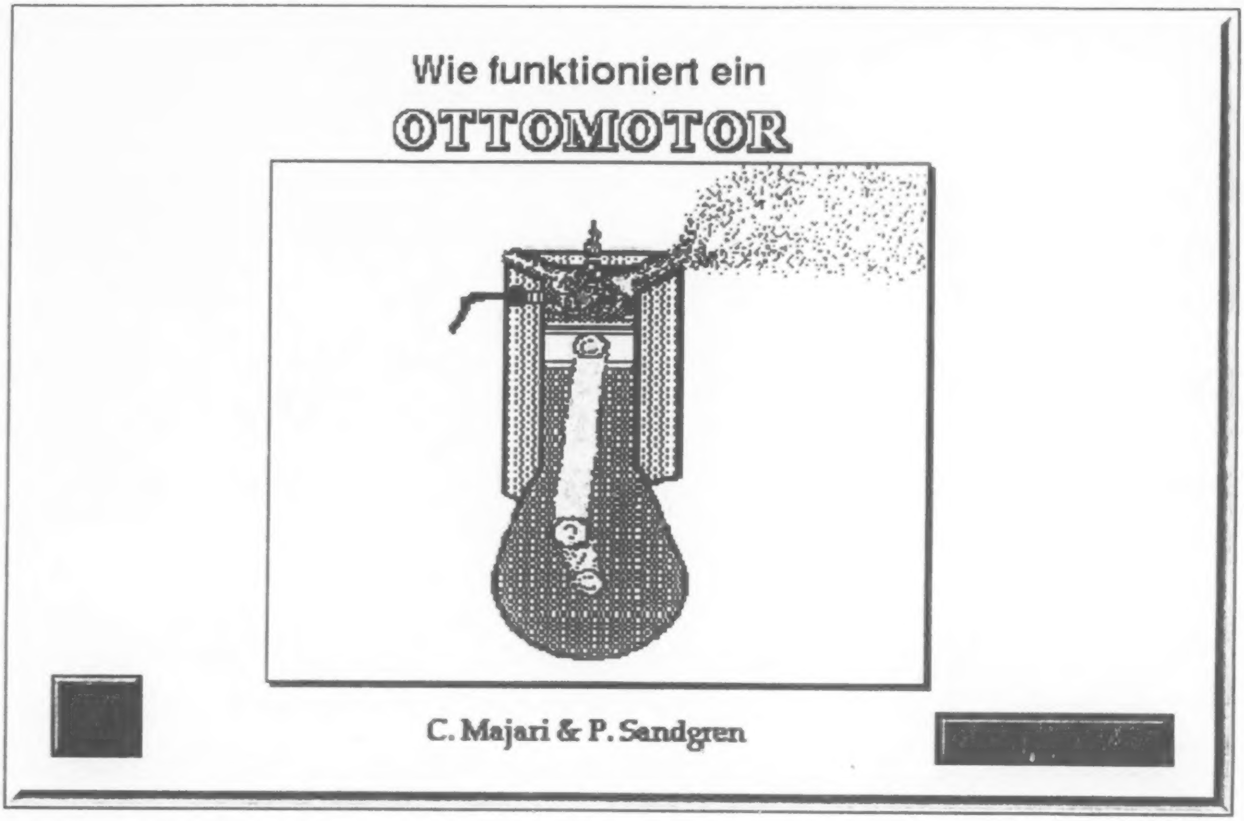




Ausstoß: Das Auslaß-Ventil ist offen, Abgas strömt aus

APPENDIX E

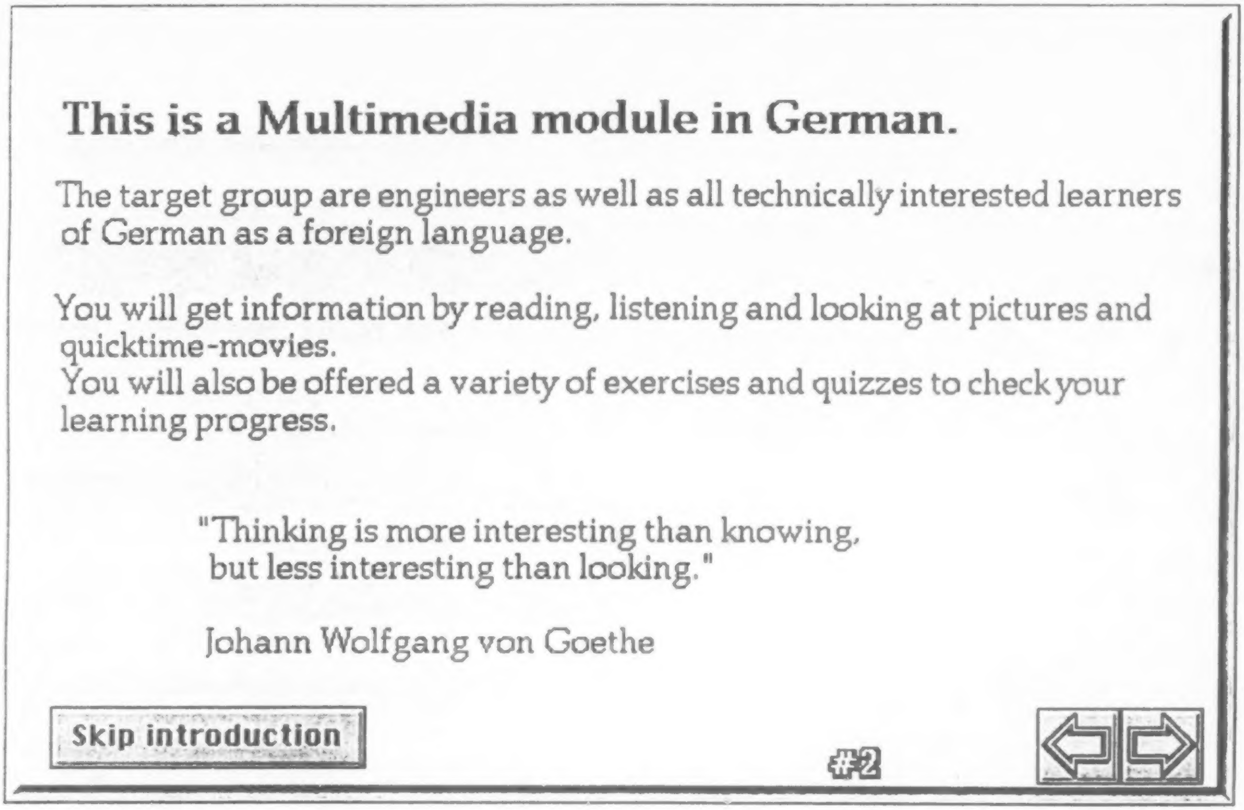




Wie funktioniert ein

OTTOMOTOR

C. Majari & P. Sandgren



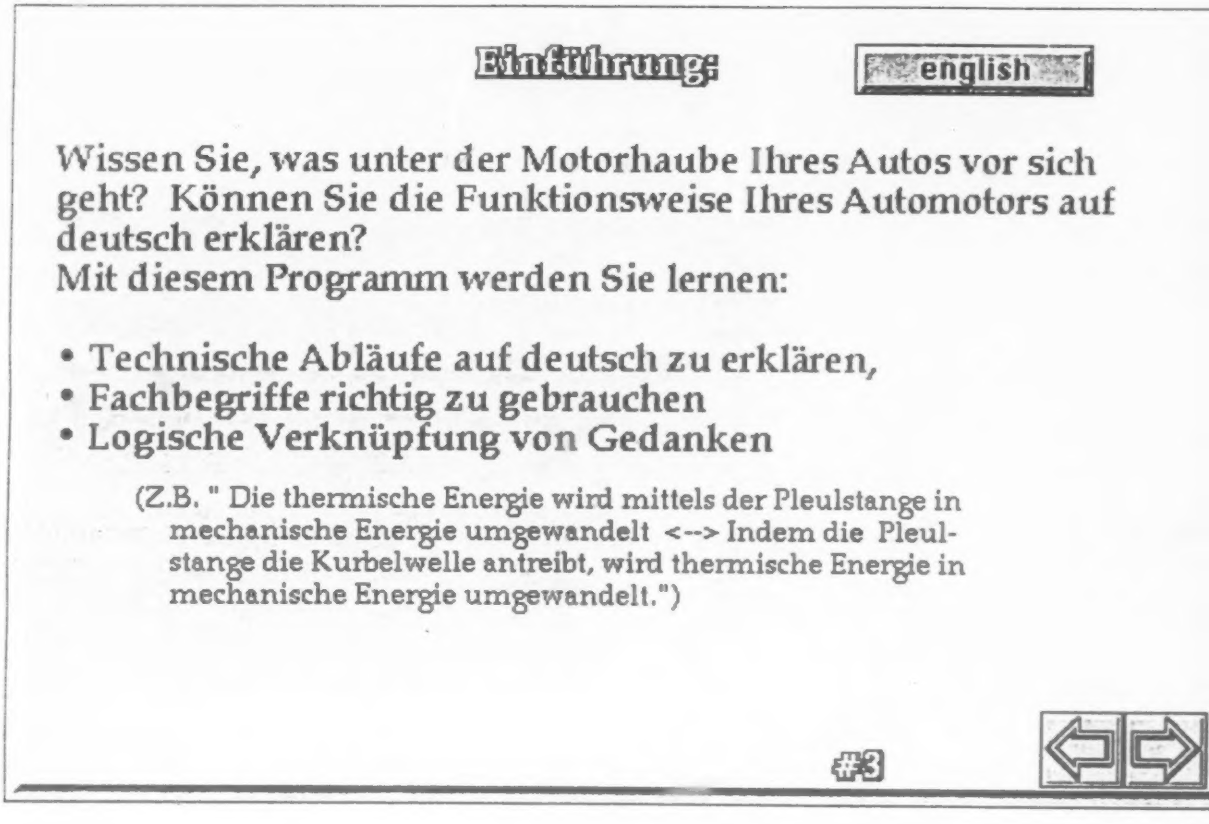
This is a Multimedia module in German.

The target group are engineers as well as all technically interested learners of German as a foreign language.

You will get information by reading, listening and looking at pictures and quicktime-movies.
You will also be offered a variety of exercises and quizzes to check your learning progress.

"Thinking is more interesting than knowing,
but less interesting than looking."

Johann Wolfgang von Goethe

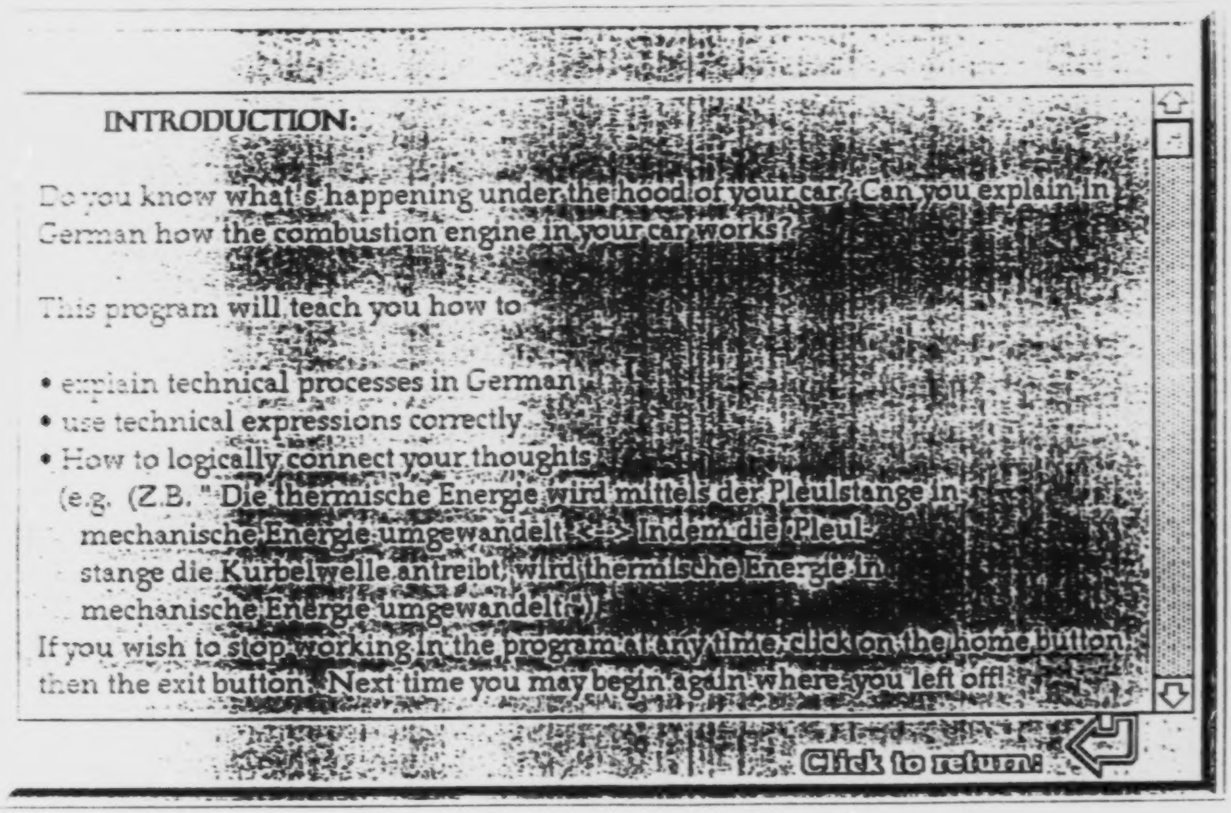


Einführung:

Wissen Sie, was unter der Motorhaube Ihres Autos vor sich geht? Können Sie die Funktionsweise Ihres Automotors auf deutsch erklären?
Mit diesem Programm werden Sie lernen:

- Technische Abläufe auf deutsch zu erklären,
- Fachbegriffe richtig zu gebrauchen
- Logische Verknüpfung von Gedanken

(Z.B. " Die thermische Energie wird mittels der Pleulstange in mechanische Energie umgewandelt <--> Indem die Pleulstange die Kurbelwelle antreibt, wird thermische Energie in mechanische Energie umgewandelt.")



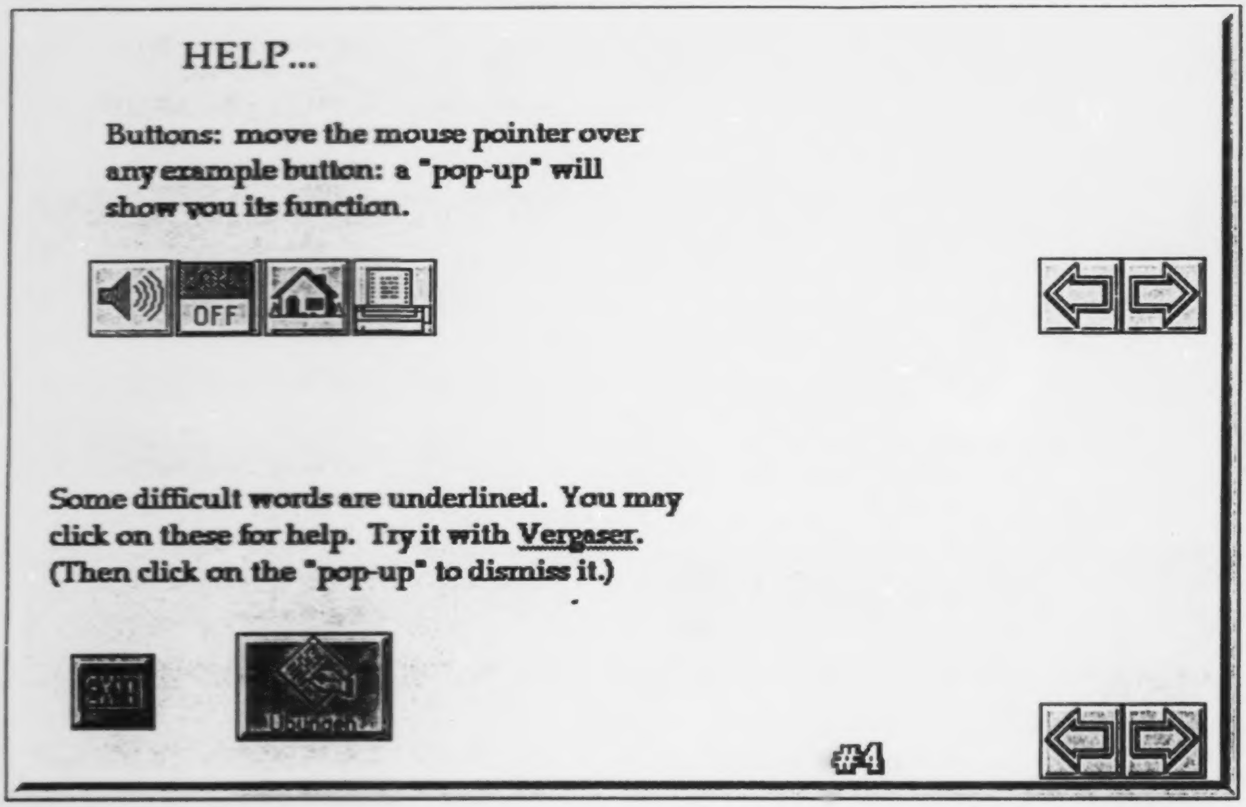
INTRODUCTION:

Do you know what's happening under the hood of your car? Can you explain in German how the combustion engine in your car works?

This program will teach you how to

- explain technical processes in German
- use technical expressions correctly
- How to logically connect your thoughts
  (e.g. (Z.B. "Die thermische Energie wird mittels der Pleulstange in mechanische Energie umgewandelt <--> Indem die Pleulstange die Kurbelwelle antreibt, wird thermische Energie in mechanische Energie umgewandelt."))

If you wish to stop working in the program at any time, click on the home button, then the exit button. Next time you may begin again where you left off!



HELP...

Buttons: move the mouse pointer over any example button: a "pop-up" will show you its function.

Some difficult words are underlined. You may click on these for help. Try it with Vergaser. (Then click on the "pop-up" to dismiss it.)

#4

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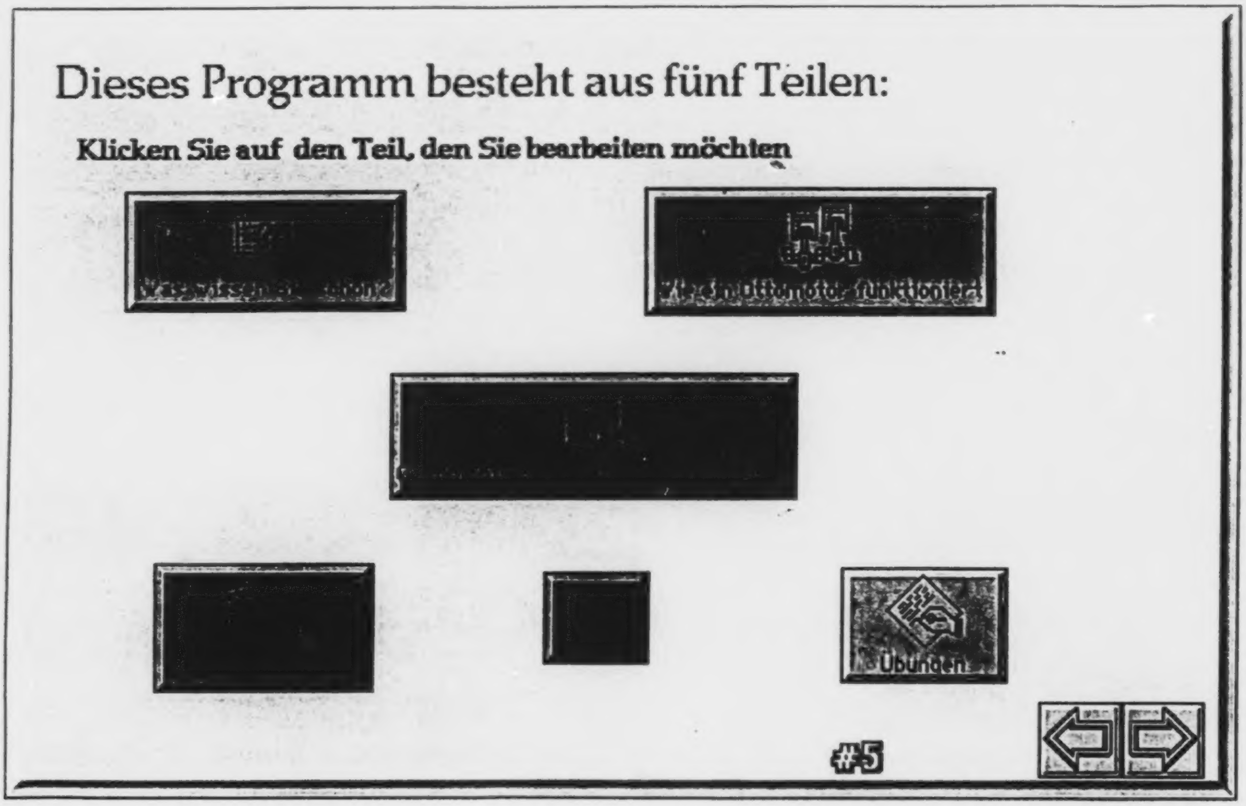
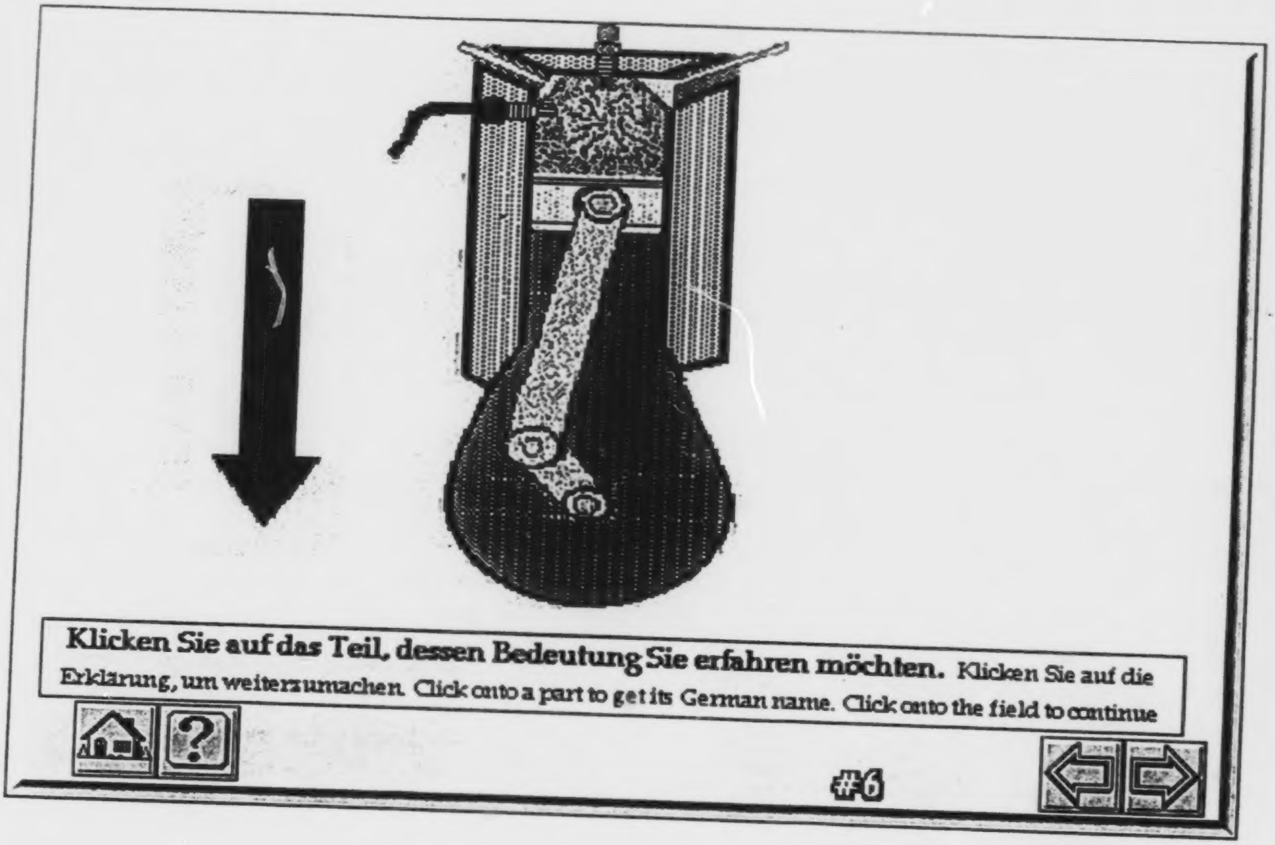
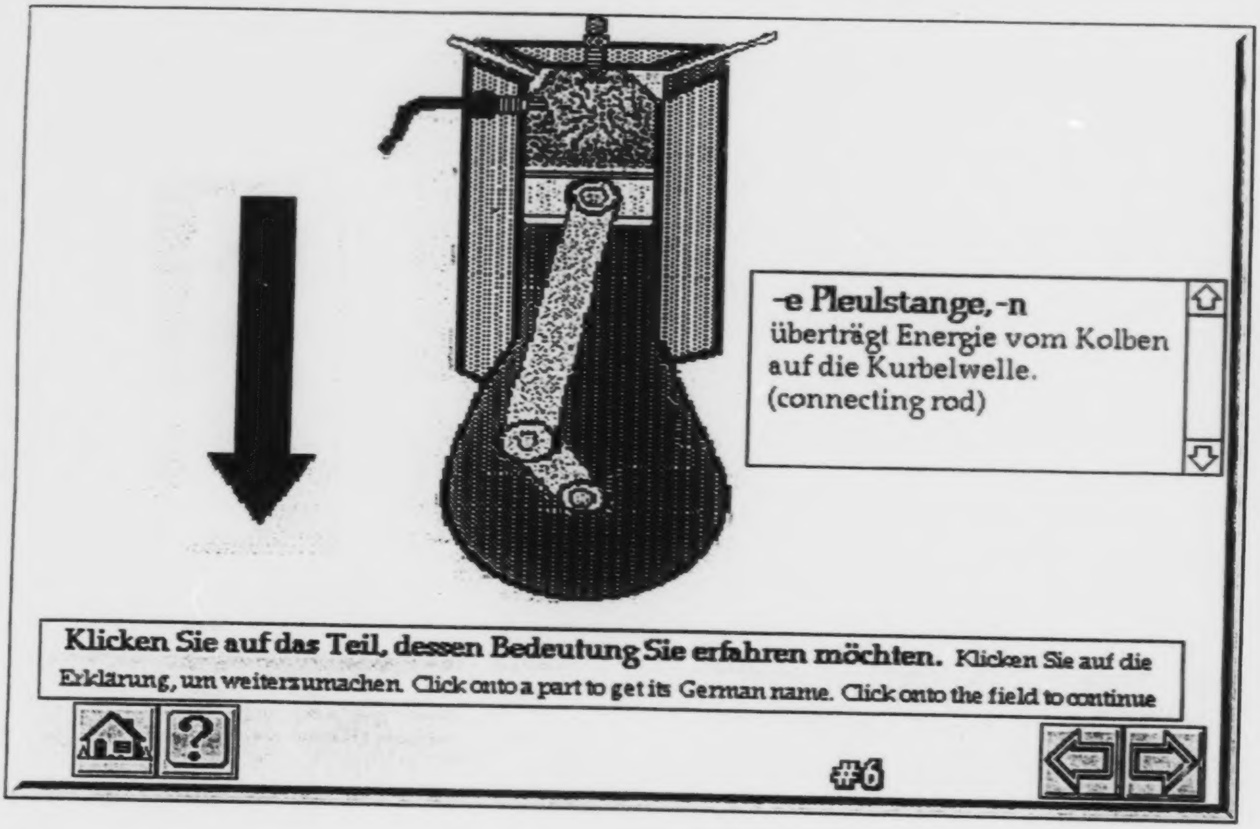


Dieses Programm besteht aus fünf Teilen:

Klicken Sie auf den Teil, den Sie bearbeiten möchten

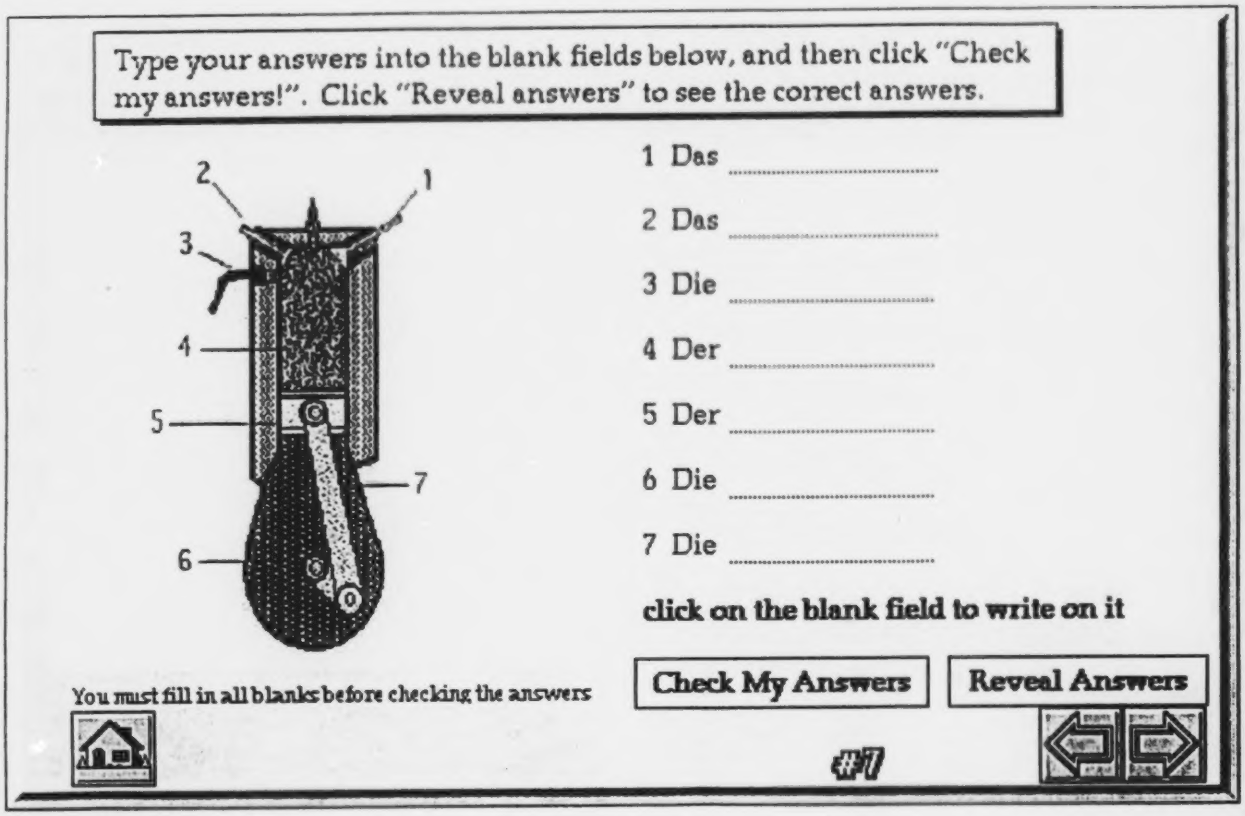


Klicken Sie auf das Teil, dessen Bedeutung Sie erfahren möchten. Klicken Sie auf die Erklärung, um weiterzumachen. Click onto a part to get its German name. Click onto the field to continue



-e Pleulstange,-n
überträgt Energie vom Kolben auf die Kurbelwelle.
(connecting rod)

Klicken Sie auf das Teil, dessen Bedeutung Sie erfahren möchten. Klicken Sie auf die Erklärung, um weiterzumachen. Click onto a part to get its German name. Click onto the field to continue



Type your answers into the blank fields below, and then click "Check my answers!". Click "Reveal answers" to see the correct answers.

1 Das ....

2 Das ....

3 Die ....

4 Der ....

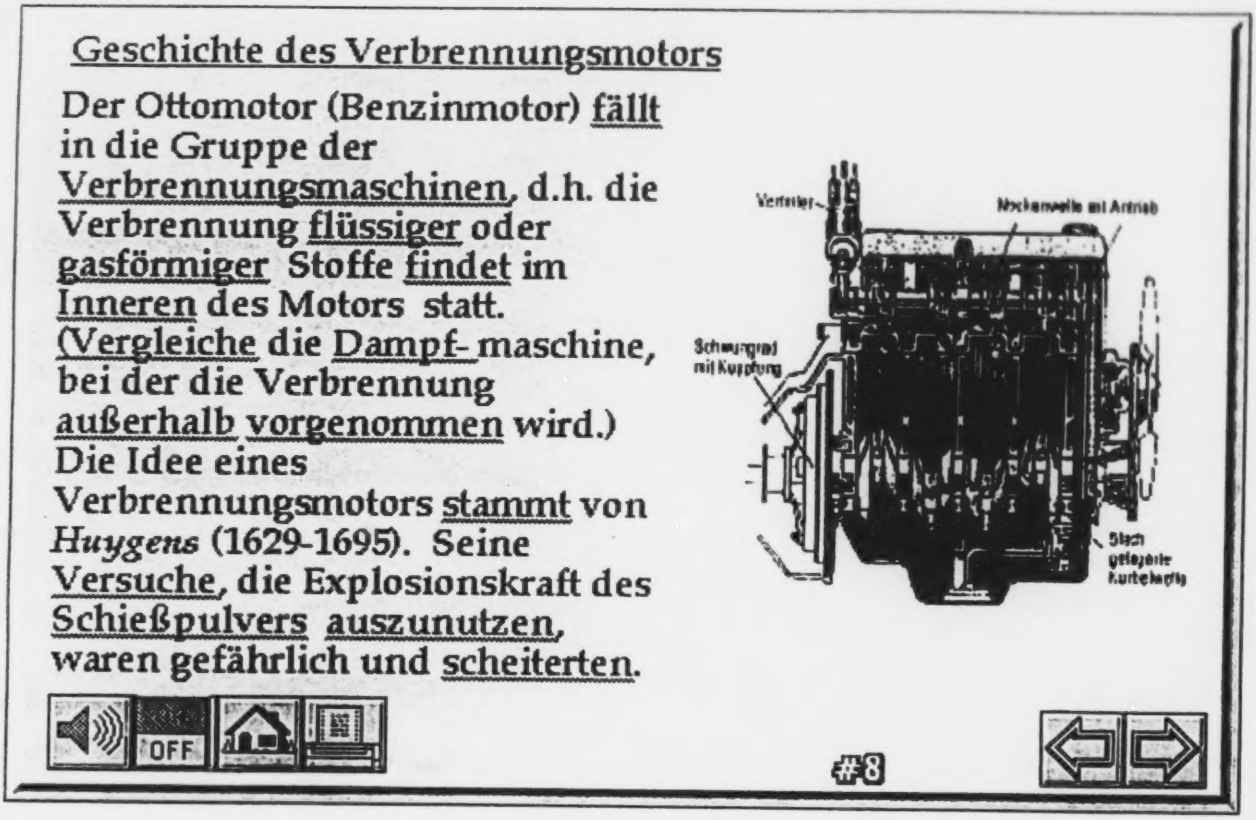
5 Der ....

6 Die ....

7 Die ....

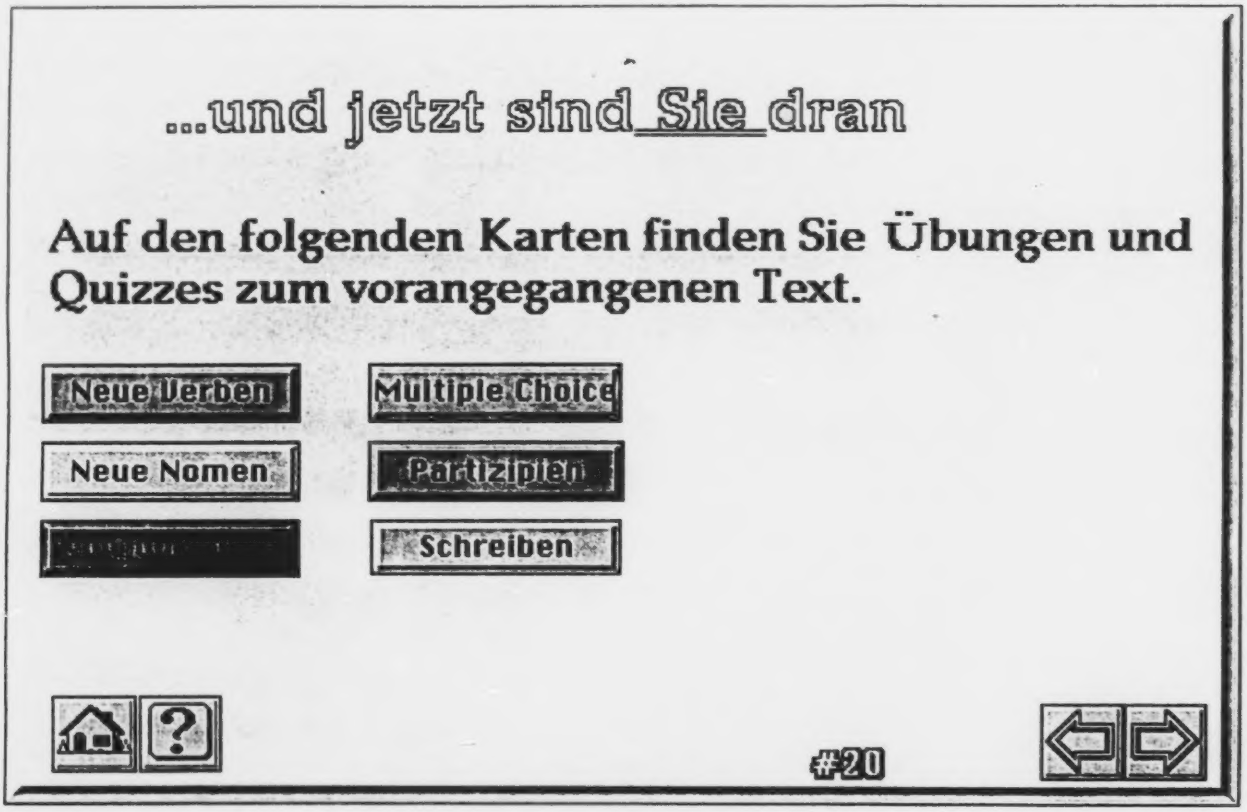
click on the blank field to write on it

You must fill in all blanks before checking the answers



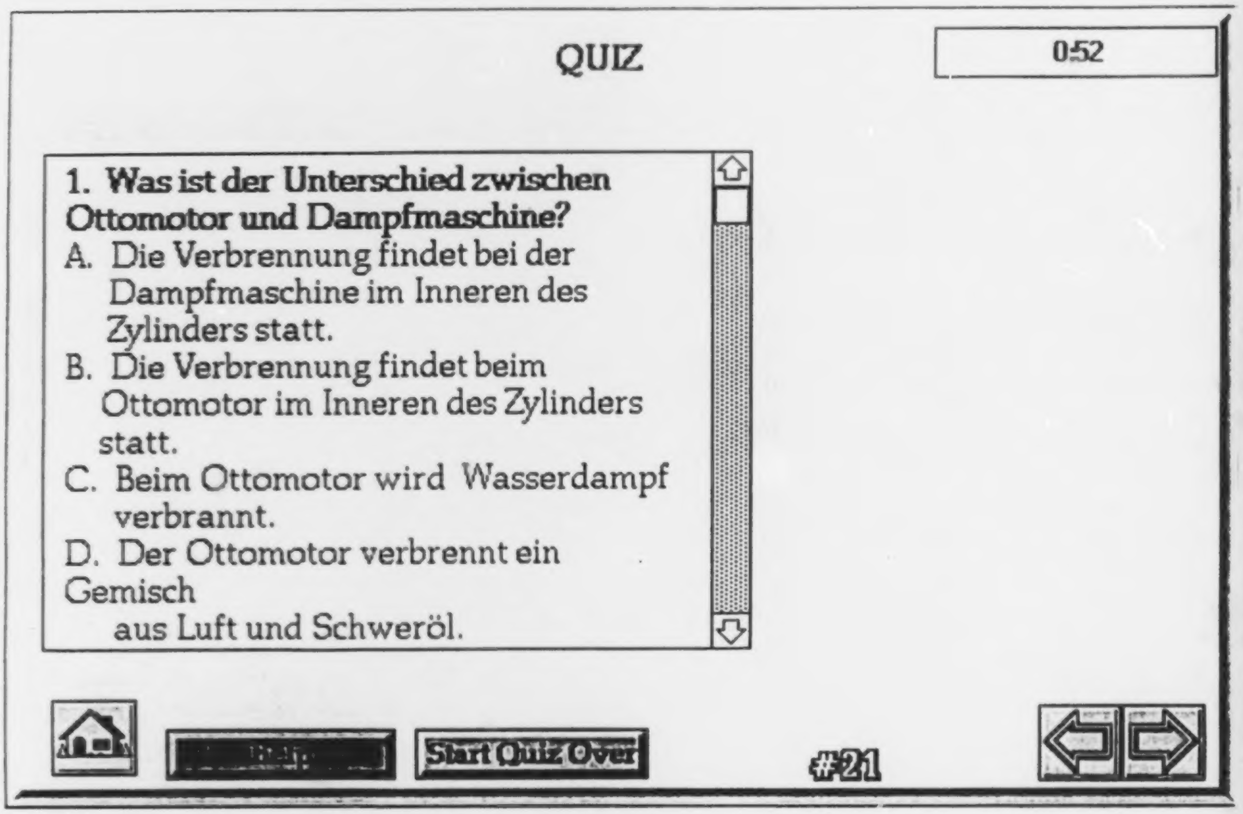
Geschichte des Verbrennungsmotors

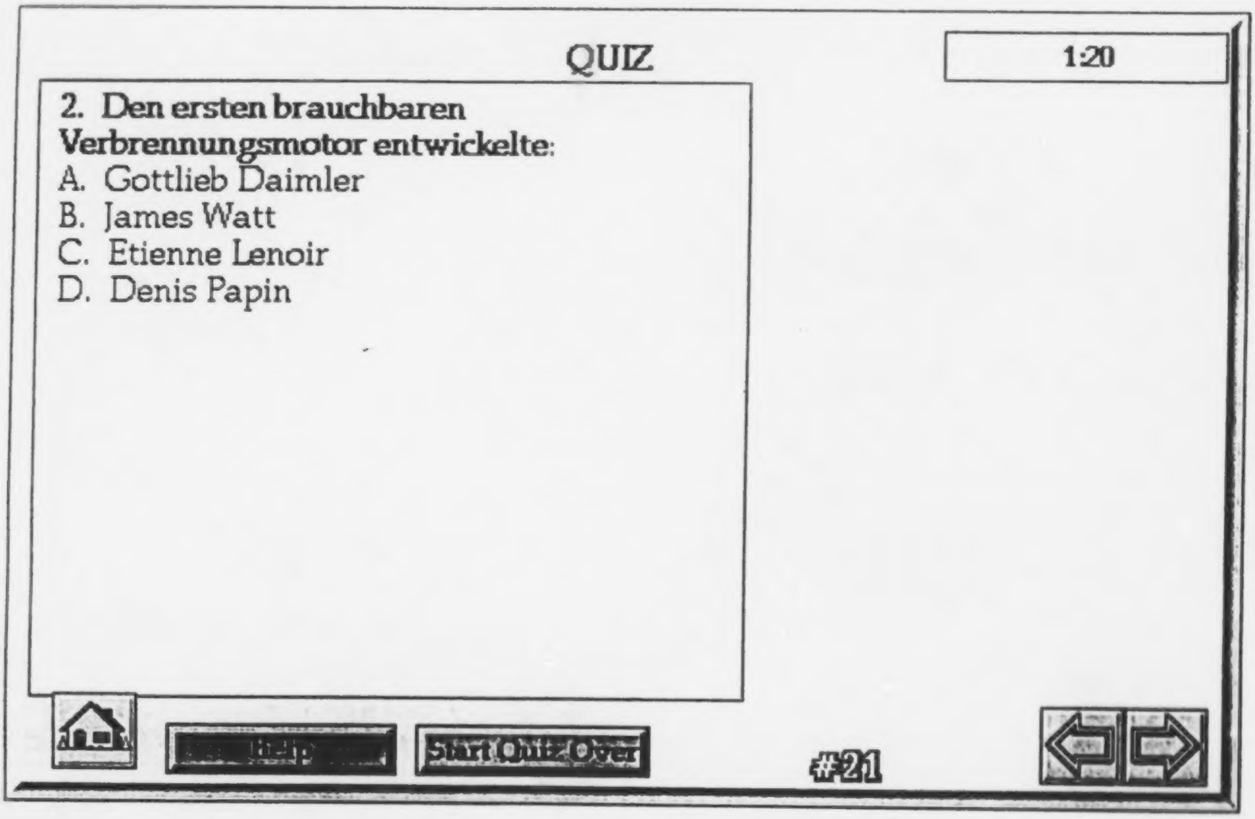
Der Ottomotor (Benzinmotor) fällt in die Gruppe der Verbrennungsmaschinen, d.h. die Verbrennung flüssiger oder gasförmiger Stoffe findet im Inneren des Motors statt. (Vergleiche die Dampf- maschine, bei der die Verbrennung außerhalb vorgenommen wird.) Die Idee eines Verbrennungsmotors stammt von *Huygens* (1629-1695). Seine Versuche, die Explosionskraft des Schießpulvers auszunutzen, waren gefährlich und scheiterten.



...und jetzt sind Sie dran

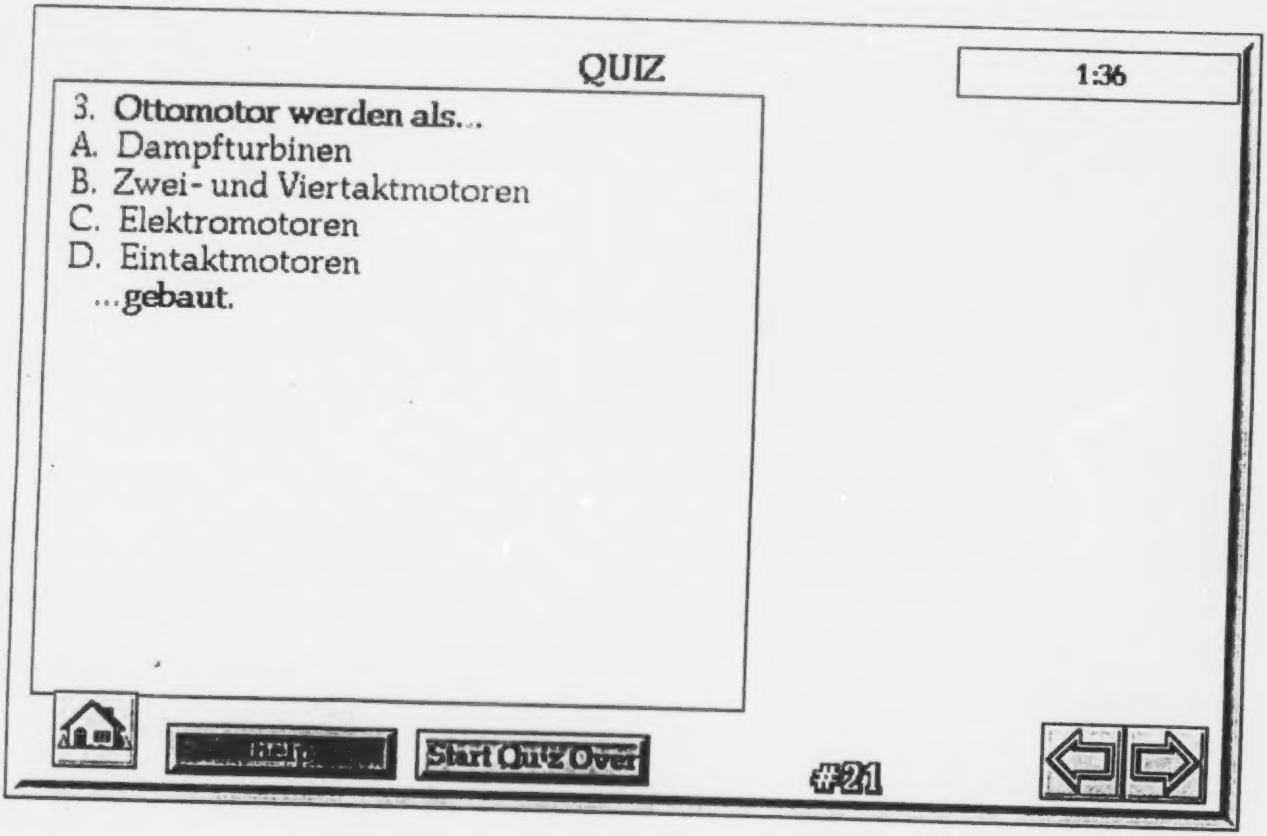
Auf den folgenden Karten finden Sie Übungen und Quizzes zum vorangegangenen Text.



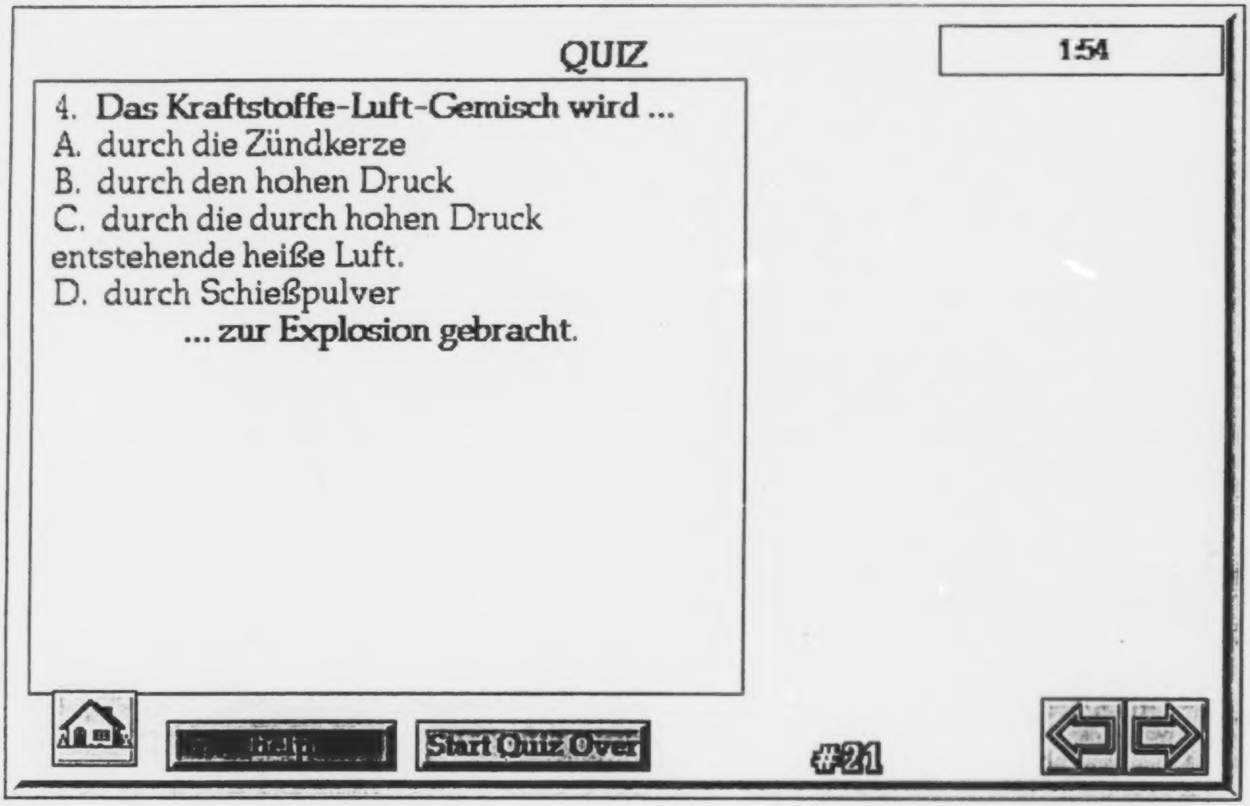


2. Den ersten brauchbaren Verbrennungsmotor entwickelte:

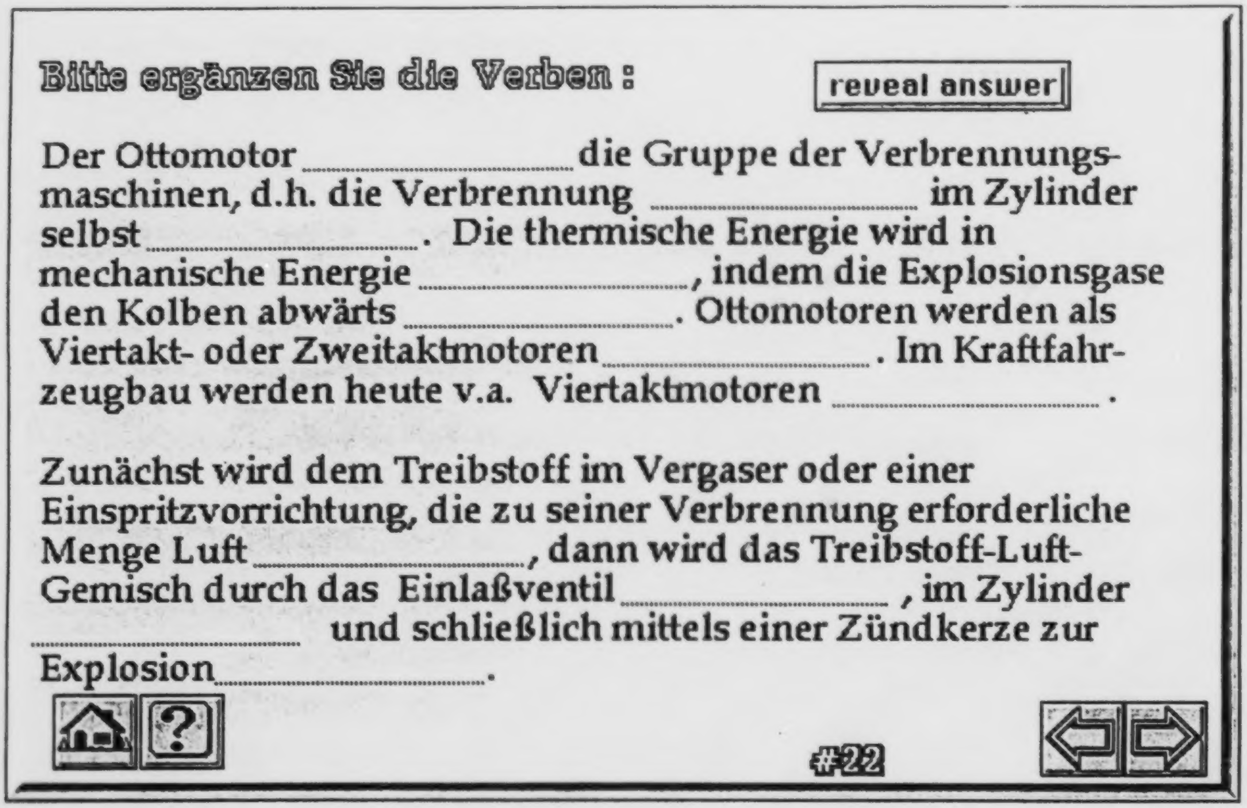
A. Gottlieb Daimler
B. James Watt
C. Etienne Lenoir
D. Denis Papin



3. Ottomotor werden als...
A. Dampfturbinen
B. Zwei- und Viertaktmotoren
C. Elektromotoren
D. Eintaktmotoren
...gebaut.



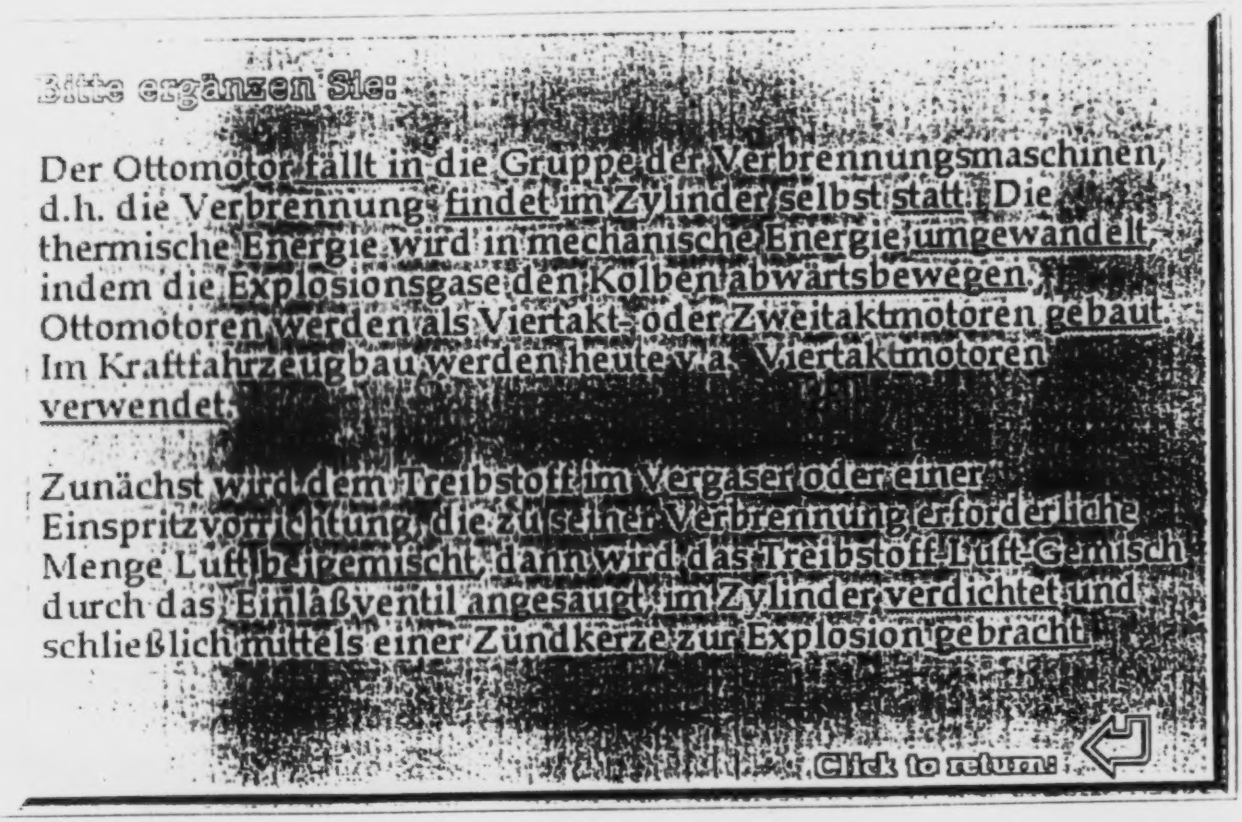
4. **Das Kraftstoffe-Luft-Gemisch wird ...**
A. durch die Zündkerze
B. durch den hohen Druck
C. durch die durch hohen Druck entstehende heiße Luft.
D. durch Schießpulver
... zur Explosion gebracht.



Bitte ergänzen Sie die Verben :

Der Ottomotor .... die Gruppe der Verbrennungsmaschinen, d.h. die Verbrennung .... im Zylinder selbst .... Die thermische Energie wird in mechanische Energie ...., indem die Explosionsgase den Kolben abwärts .... Ottomotoren werden als Viertakt- oder Zweitaktmotoren .... Im Kraftfahrzeugbau werden heute v.a. Viertaktmotoren ....

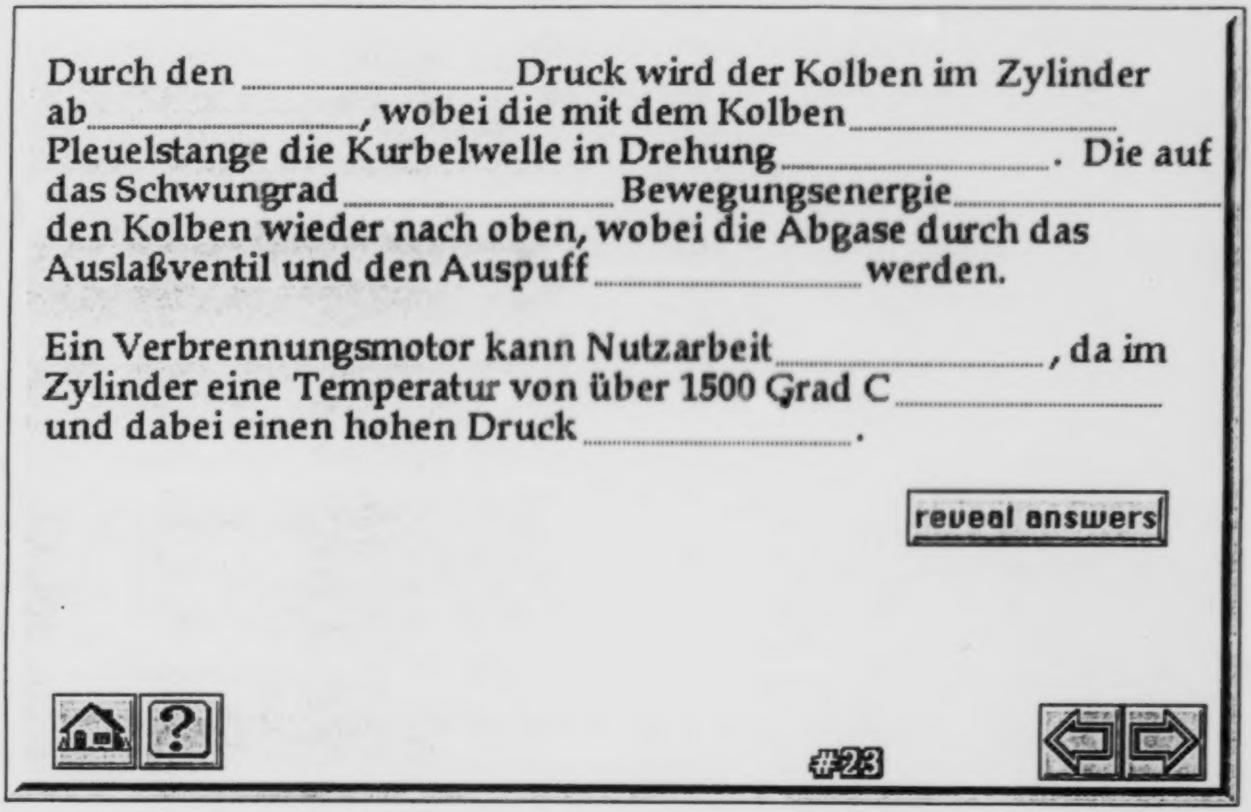
Zunächst wird dem Treibstoff im Vergaser oder einer Einspritzvorrichtung, die zu seiner Verbrennung erforderliche Menge Luft ...., dann wird das Treibstoff-Luft-Gemisch durch das Einlaßventil .... , im Zylinder .... und schließlich mittels einer Zündkerze zur Explosion ....



Bitte ergänzen Sie:

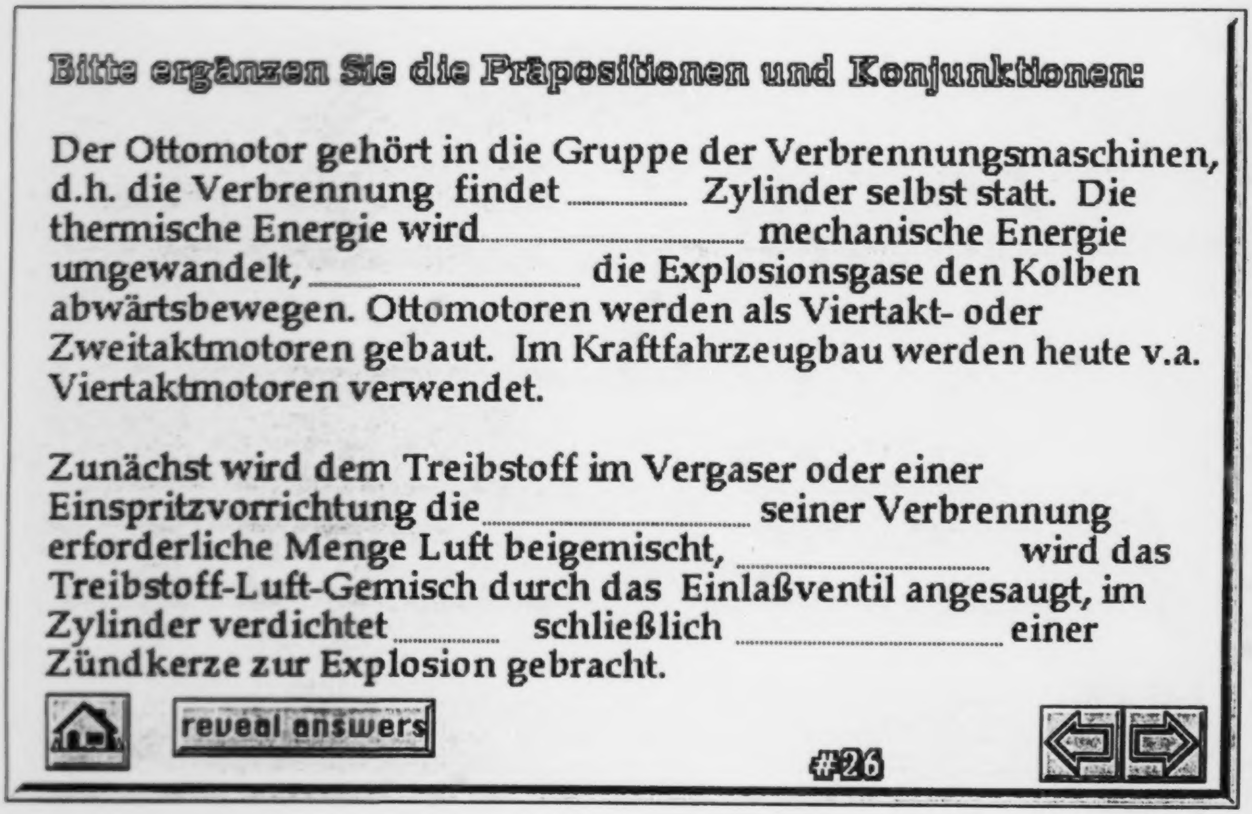
Der Ottomotor fällt in die Gruppe der Verbrennungsmaschinen, d.h. die Verbrennung findet im Zylinder selbst statt. Die thermische Energie wird in mechanische Energie umgewandelt, indem die Explosionsgase den Kolben abwärtsbewegen. Ottomotoren werden als Viertakt- oder Zweitaktmotoren gebaut. Im Kraftfahrzeugbau werden heute v.a. Viertaktmotoren verwendet.

Zunächst wird dem Treibstoff im Vergaser oder einer Einspritzvorrichtung, die zu seiner Verbrennung erforderliche Menge Luft beigemischt, dann wird das Treibstoff-Luft-Gemisch durch das Einlaßventil angesaugt, im Zylinder verdichtet und schließlich mittels einer Zündkerze zur Explosion gebracht.



Durch den ....Druck wird der Kolben im Zylinder ab..........................., wobei die mit dem Kolben .... Pleuelstange die Kurbelwelle in Drehung .... Die auf das Schwungrad .... Bewegungsenergie .... den Kolben wieder nach oben, wobei die Abgase durch das Auslaßventil und den Auspuff .... werden.

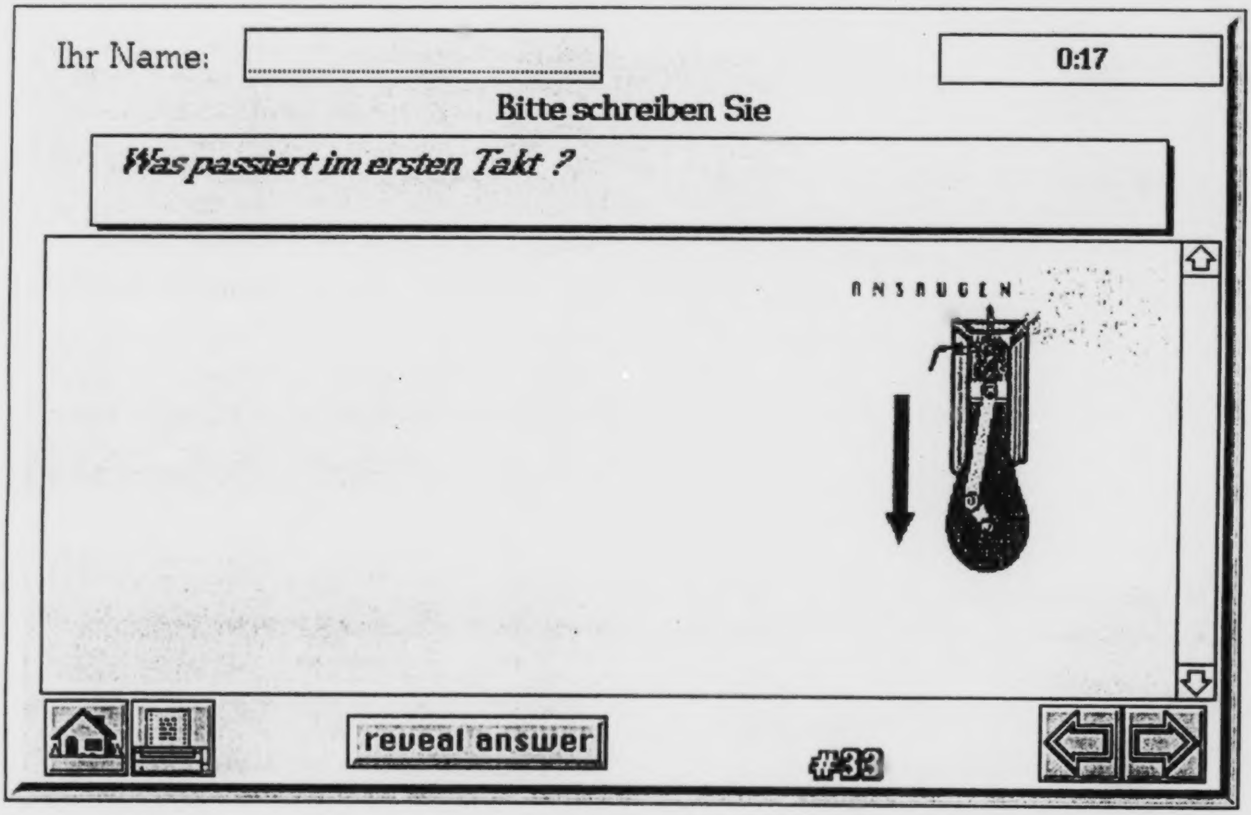
Ein Verbrennungsmotor kann Nutzarbeit ...., da im Zylinder eine Temperatur von über 1500 Grad C .... und dabei einen hohen Druck ....



Bitte ergänzen Sie die Präpositionen und Konjunktionen:

Der Ottomotor gehört in die Gruppe der Verbrennungsmaschinen, d.h. die Verbrennung findet .... Zylinder selbst statt. Die thermische Energie wird .... mechanische Energie umgewandelt, ... die Explosionsgase den Kolben abwärtsbewegen. Ottomotoren werden als Viertakt- oder Zweitaktmotoren gebaut. Im Kraftfahrzeugbau werden heute v.a. Viertaktmotoren verwendet.

Zunächst wird dem Treibstoff im Vergaser oder einer Einspritzvorrichtung die .... seiner Verbrennung erforderliche Menge Luft beigemischt, ... wird das Treibstoff-Luft-Gemisch durch das Einlaßventil angesaugt, im Zylinder verdichtet .... schließlich .... einer Zündkerze zur Explosion gebracht.

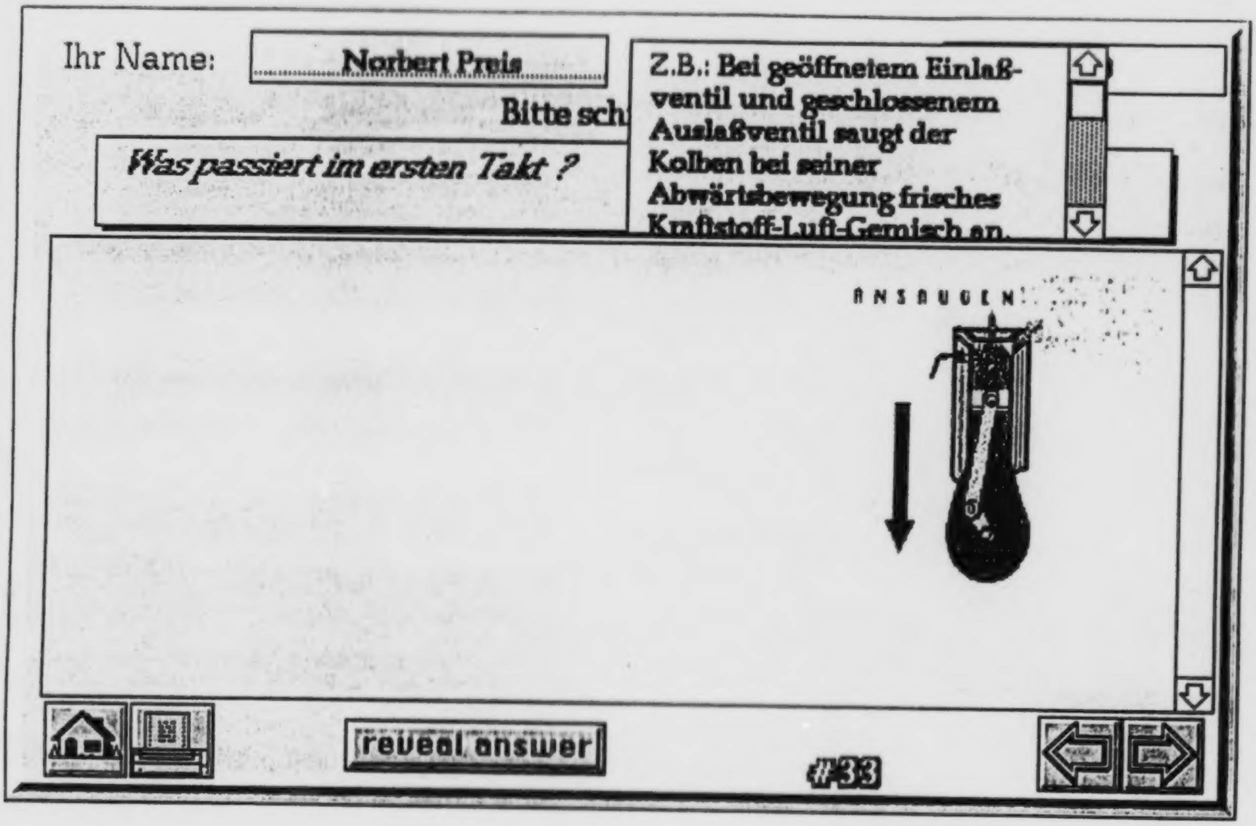


Ihr Name:

0:17

Bitte schreiben Sie

Was passiert im ersten Takt ?



Ihr Name: Norbert Preis

Bitte sch

Was passiert im ersten Takt ?

Z.B.: Bei geöffnetem Einlaßventil und geschlossenem Auslaßventil saugt der Kolben bei seiner Abwärtsbewegung frisches Kraftstoff-Luft-Gemisch an.

APPENDIX F

[illegible]

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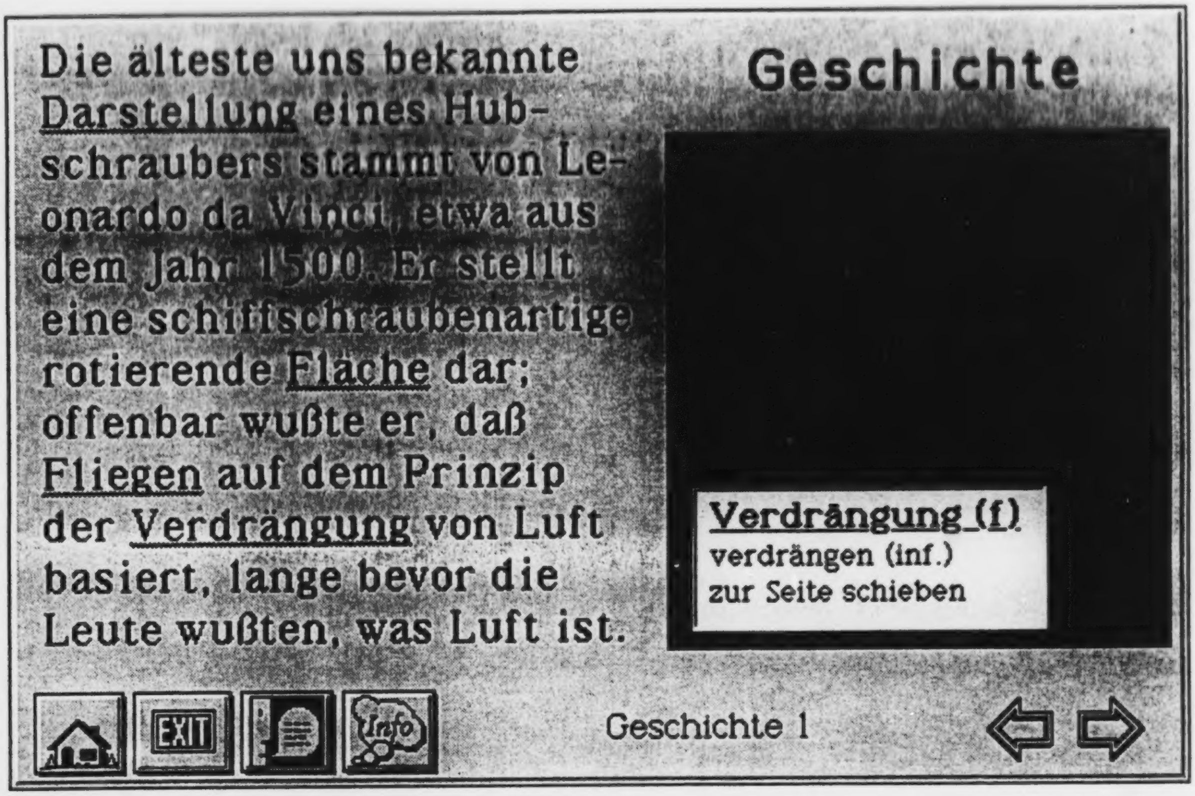
Geschichte
die Grenzen
Funktionsprinzip
Ausblick
EXIT
Info

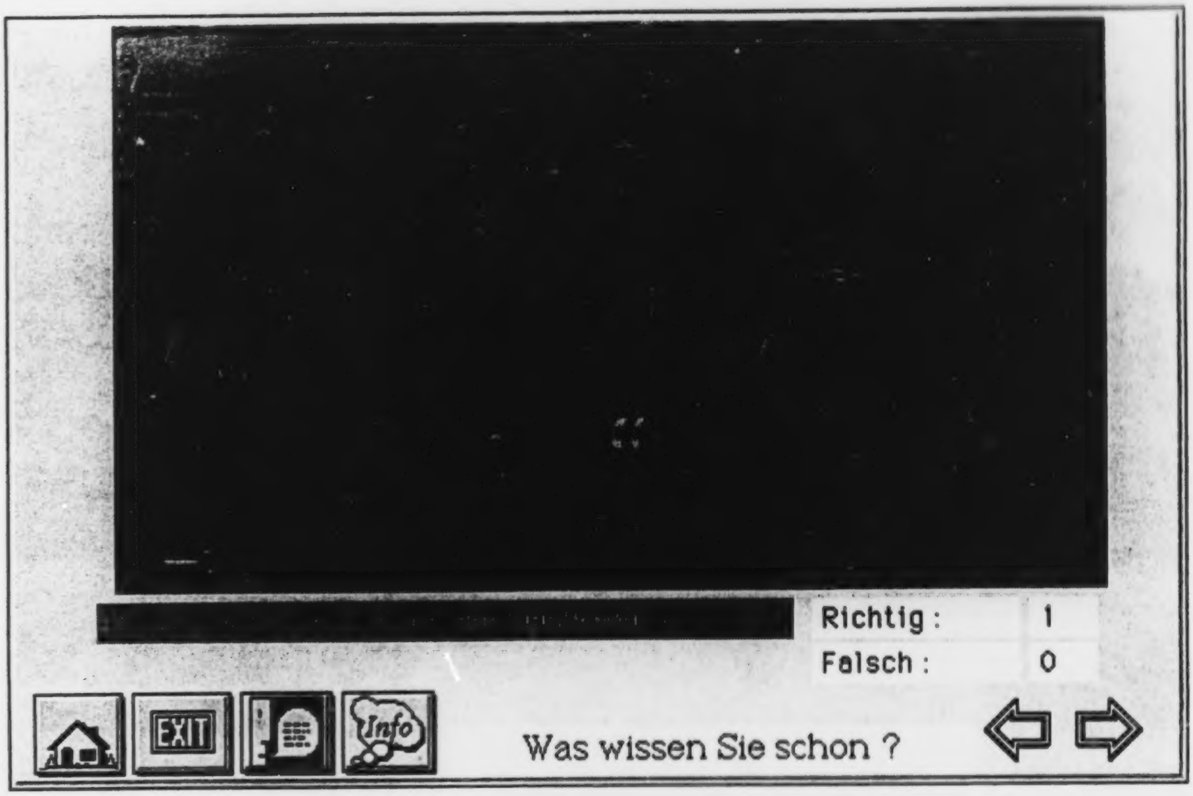


Geschichte

Die älteste uns bekannte Darstellung eines Hubschraubers stammt von Leonardo da Vinci, etwa aus dem Jahr 1500. Er stellt eine schiffschraubenartige rotierende Fläche dar; offenbar wußte er, daß Fliegen auf dem Prinzip der Verdrängung von Luft basiert, lange bevor die Leute wußten, was Luft ist.

Verdrängung (f)
verdrängen (inf.)
zur Seite schieben

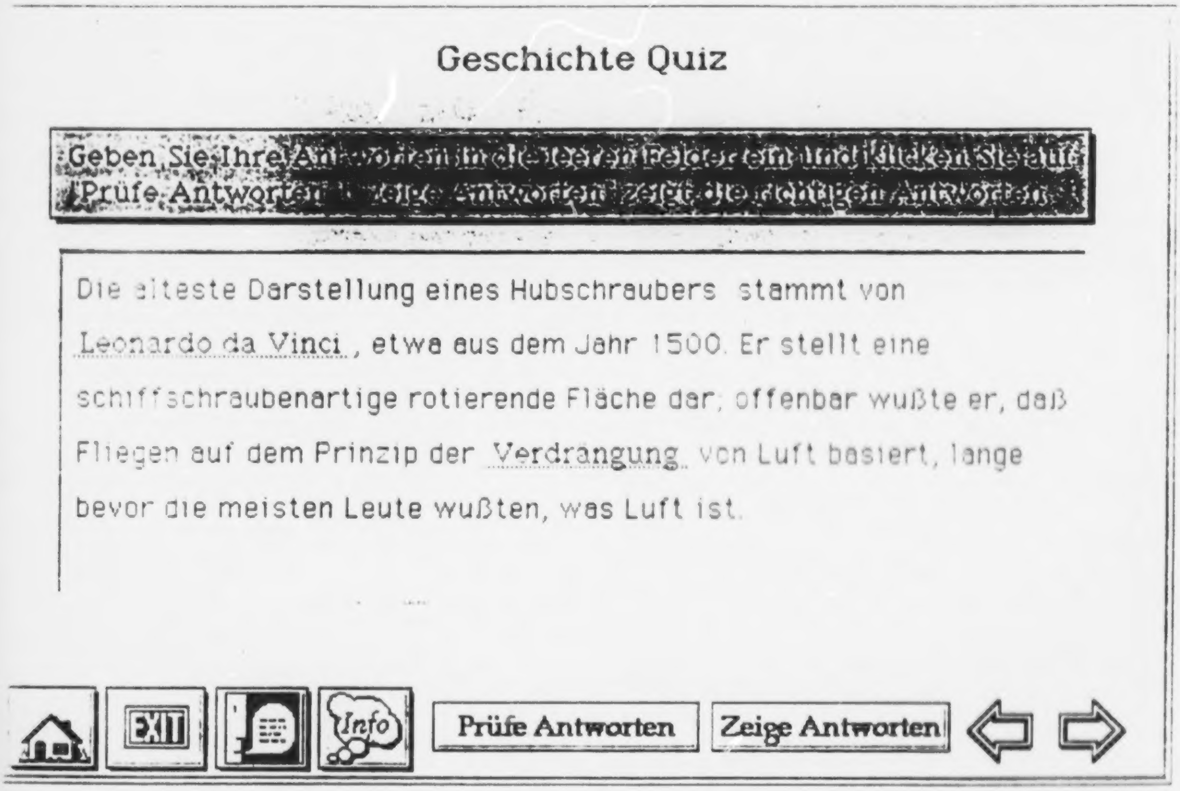
Geschichte 1



Richtig : 1

Falsch : 0

Was wissen Sie schon ?



Geschichte Quiz

Geben Sie Ihre Antworten in die leeren Felder ein und klicken Sie auf 'Prüfe Antworten'. 'Zeige Antworten' zeigt die richtigen Antworten.

Die älteste Darstellung eines Hubschraubers stammt von Leonardo da Vinci, etwa aus dem Jahr 1500. Er stellt eine schiffschraubenartige rotierende Fläche dar; offenbar wußte er, daß Fliegen auf dem Prinzip der Verdrängung von Luft basiert, lange bevor die meisten Leute wußten, was Luft ist.

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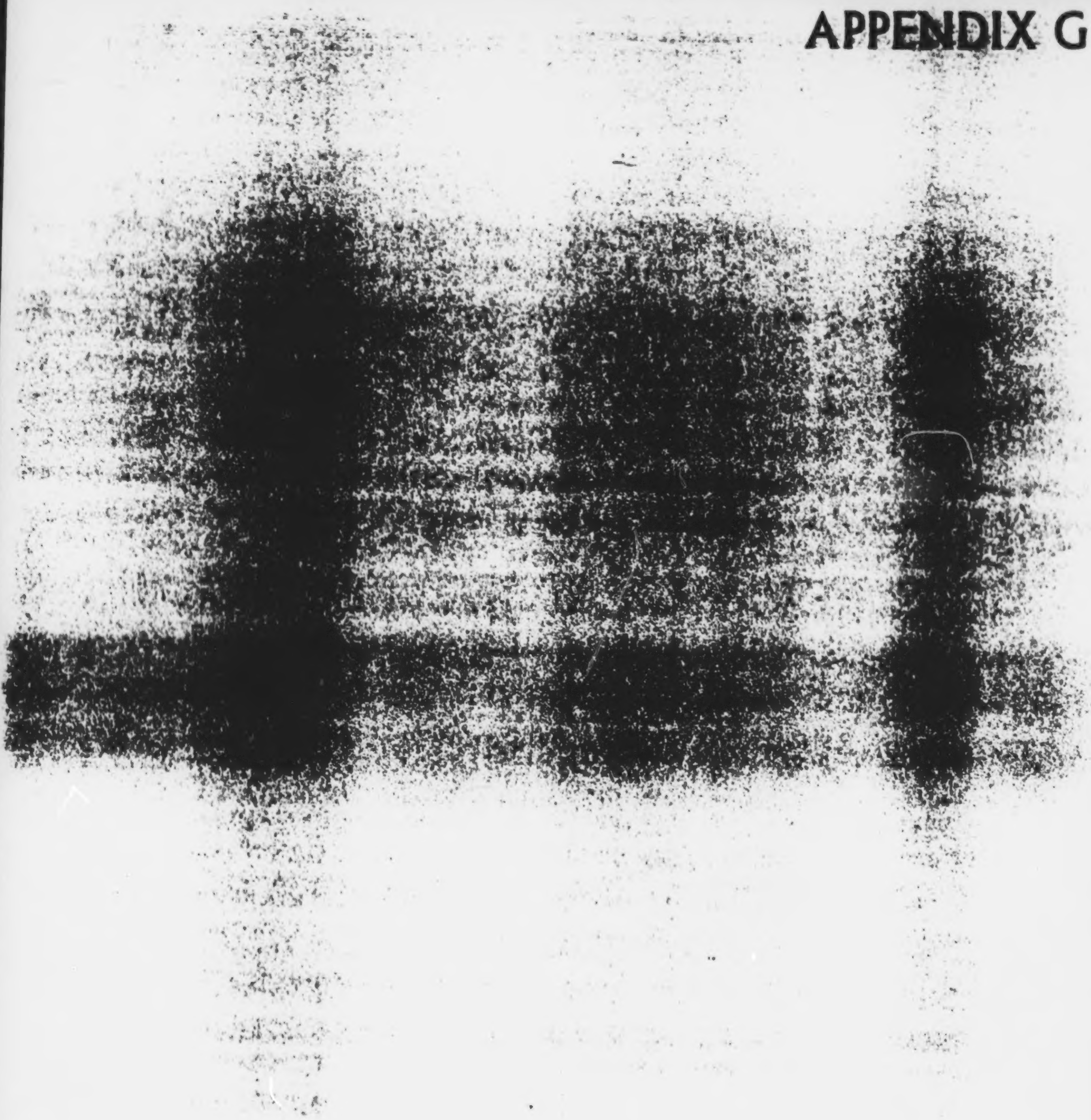
APPENDIX G



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Cultural Proficiency Questionnaire
EUROTECH Study Trip

SOCIAL STRATIFICATION

1. In a “Fußgängerzone,” what “types” do you think one can make out in terms of dress-code and attitude?

2. Do you find that in a “Fußgängerzone” there are members of a distinct underclass present, like homeless and panhandlers? How do you think the passers-by treat them?

3. What role do you think post office and railway employees (who are no longer fully governmental officials), or the police and the military have in daily life?

4. How do Germans interact in terms of age differences and difference in professional status? You might have made observations in class/ in your instructors’ offices.

5. Do you think that there are many non-German looking people in Germany? Is Germany ethnically diverse? Socially diverse?

6. What do Germans do in public that you would expect Americans to keep private?

7. How do Germans feel about foreigners in their country? Do they have negative attitudes toward particular national or socio-economic groups?

DAILY LIFE

1. Do Germans make greater or less use of public transportation (streetcar, bus, train) than Americans? Why?

2. How do Germans feel about the use of energy (heat, electricity)? Do they tend to conserve more or less than Americans?

3. Do you think Germans are as "environmentally aware" as Americans (air pollution, forests, wildlife, re-cycling)?

4. How do German and American cities compare in terms of crime rate and cleanliness?

5. On which days are German shops closed? How are daily store hours different from American shopping hours?

WORKPLACE

1. What do you know about the connection of school and work in Germany? Explain.

2. Have you ever heard of apprenticeship training? What do you know about it?

3. Do you think the German labor force has a higher educational level than its American counterpart?

4. Do you think Germans have a different attitude toward work than Americans? How so? Explain?

5. Do you expect German companies to be very hierarchically structured where the person on the shop floor has no idea what the business executives decide to do? Explain.

6. Who, do you think, runs a big German company? A CEO with an MBA, an engineer, a lawyer, a humanist?

7. In which country, do you think, is productivity higher, in the US or in Germany? Explain.

8. How many hours a week do Germans work?

9. How long is the minimum vacation period in Germany?

10. What is the role of trade unions in Germany, as far as you can tell?

11. Do you expect German industry to be using innovative mangagement practices, e.g., job rotation, self-managed teams, consistent monitoring of potential problems, etc.?

12. Do you think German industry, (partly subsidized by the government/European Union), is heavily export-oriented? Which countries are its most important trading partners? Explain.

13. Do you think that the German economy primarily depends on large or small and medium-sized companies? Explain.

14. Do you expect German companies to respond to strict environmental protection laws? Do you think environmental concerns are a priority for them?

15. What do you think is the social status/prestige of an engineer/scientist in Germany? What kind of salary do you think they make?

MEDIA

1. Do you think most Germans are voracious readers? Of books? Of newspapers? Avid radio listeners? Passionate movie watchers? Great tv fans? Explain.

2. Can you think of the names of any German newspapers and/or magazines? How can you inform yourself?

3. What do you think Germans--depending on class, education, social status-- are most interested in when turning to the media? Politics, international affairs, national news, regional/local stories; human interest stories; investigative reporting; in-depth analysis; sports; the arts.

4. What do you know about German television? How does it compare to US television?

5. Do you expect a similar or different style of advertising in the print and broadcast media? Explain.

6. What American media (film, books, pop music) make it to Germany?

FOOD/EATING and ENTERTAINMENT HABITS

1. What does a typical German meal consist of? What do you expect to be the main source of carbohydrates, fats, and proteins in every meal? (Frühstück, Mittagessen, Abendessen)

2. Where do the Germans go for a good time? What do they drink, when do they go out? Do they prefer to sit, grink, and talk -- or do they rather like to dance and be active? Are there any differences between younger Germans and their idea of a good time and a "Huskie" good time?

3. What do you think many Germans tend to talk about when they have a good time (bars, restaurants)?

4. Do you think Germans are very much into fitness, health studios, and jogging?

5. What do you think is the Germans' favorite sport? Do they like to participate in it, or do they prefer to be a spectator? What is the general attitude towards sports celebrities?

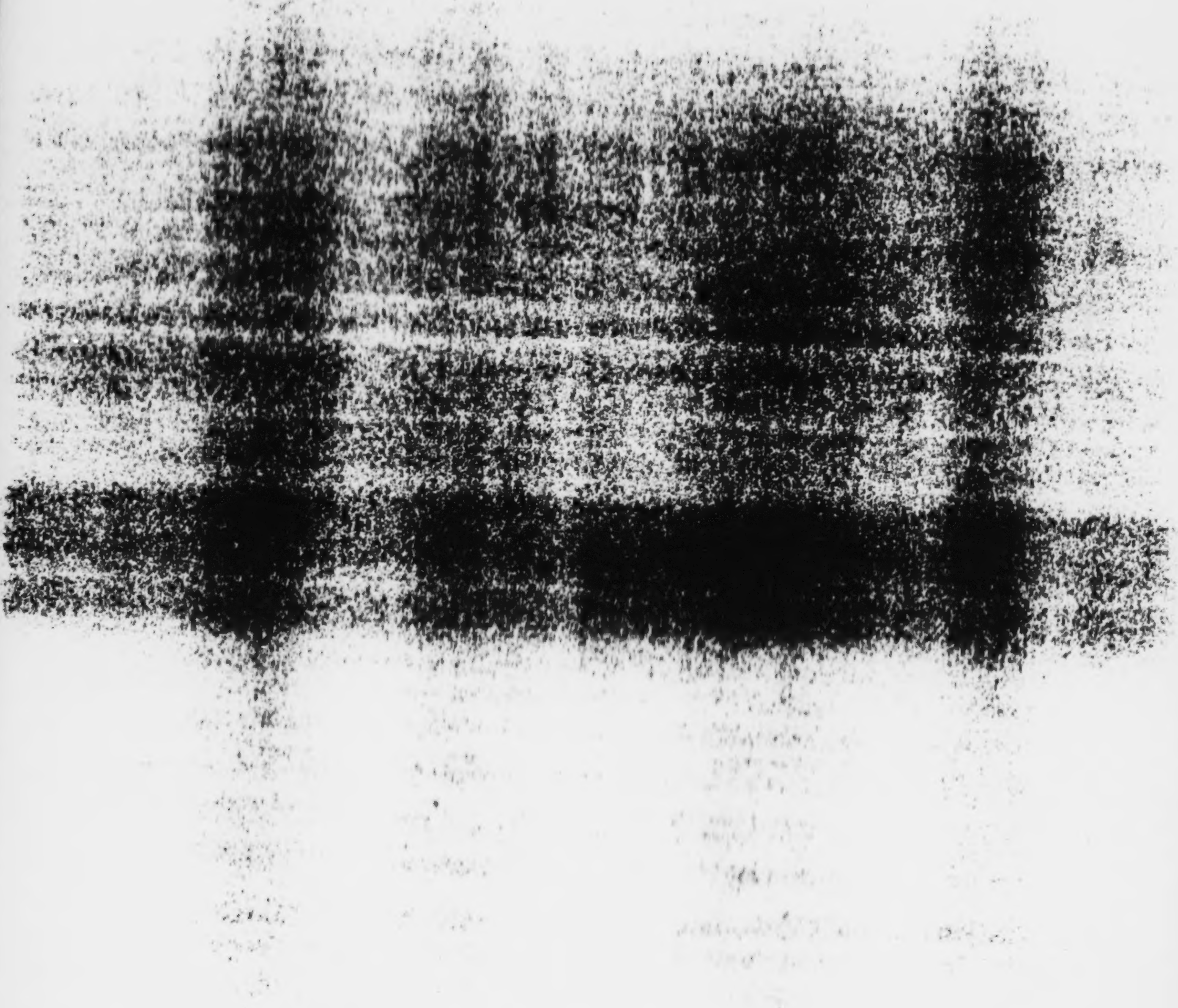
6. In the US., younger people seem to be inclined to wear clothes advertising a particular sport and a particular team (the Huskies, for example). Would you think that younger Germans also find that fashionable?

7. Who pays the first round in the US., who pays in Germany? How does this work when inviting a member of the opposite sex for a beer?

8. Is eating out more popular in the US., or in Germany?

9. Do many Germans love theater, opera, and chamber music? How could you find out about this while in Stuttgart?

APPENDIX H



Yankee Ingenuity Initiative
Project #95H007

200-word Summary

The EUROTECH program is an innovative program combining German and Engineering supported by the Fund for the Improvement of Posts-Secondary Education/FIPSE. This Elias Howe grant was to give the instructors in EUROTECH the opportunity to develop, test, and use interactive computerized learning modules.

A multimedia computer laboratory with fifteen learner stations and a sophisticated authoring station was requested to provide EUROTECH students with an effective, learner-centered foreign language education that addresses the learning styles and the professional interests of engineering students. Given the particular group of learners and their professional objectives--e.g., to find employment in an increasingly international U.S. industry--and since there is hardly any commercial instructional software available for content-based language instruction (teaching the language through a particular disciplinary content, like engineering), we have to write instructional software ourselves.

Two modules have already been developed since the EUROTECH laboratory has been established in the department of Modern and Classical Languages at the University of Connecticut: one on the four-stroke engine, the other on the helicopter. Both units follow the pedagogical format described in the initial proposal and allow EUROTECH students to reinforce and improve technical as well as German knowledge. The units increase student proficiency in the language as well as their cultural awareness.

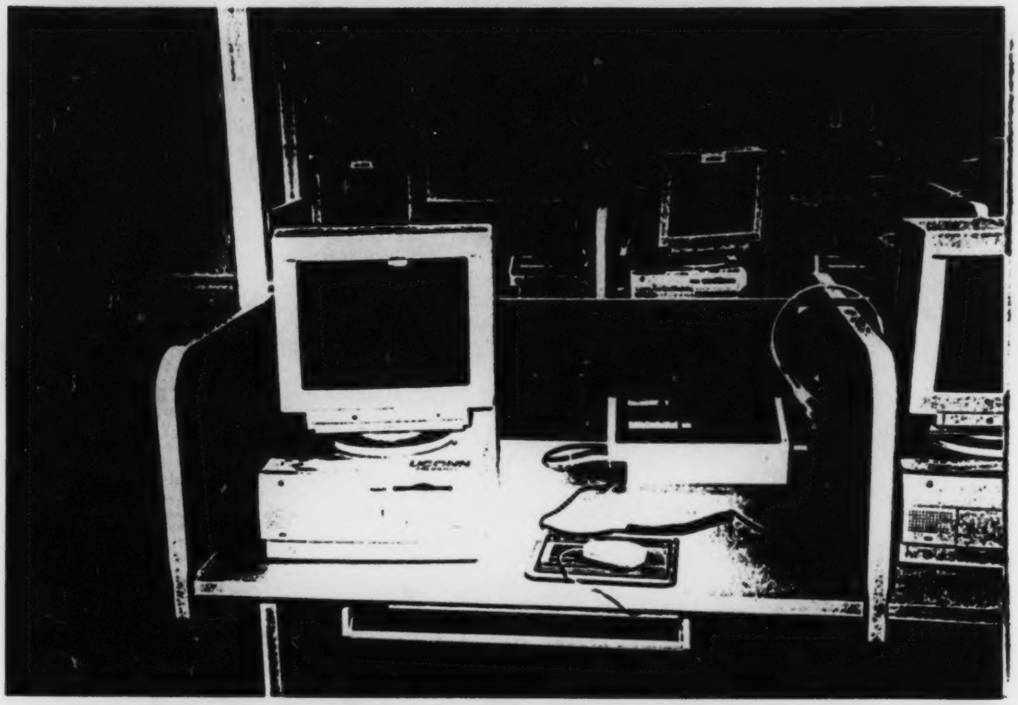


Figure 6 Typical Computer Work Station

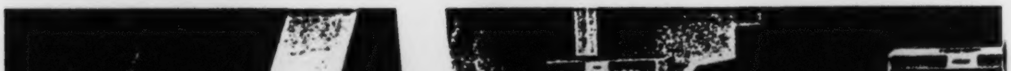


Figure 7 Typical Video Work Station

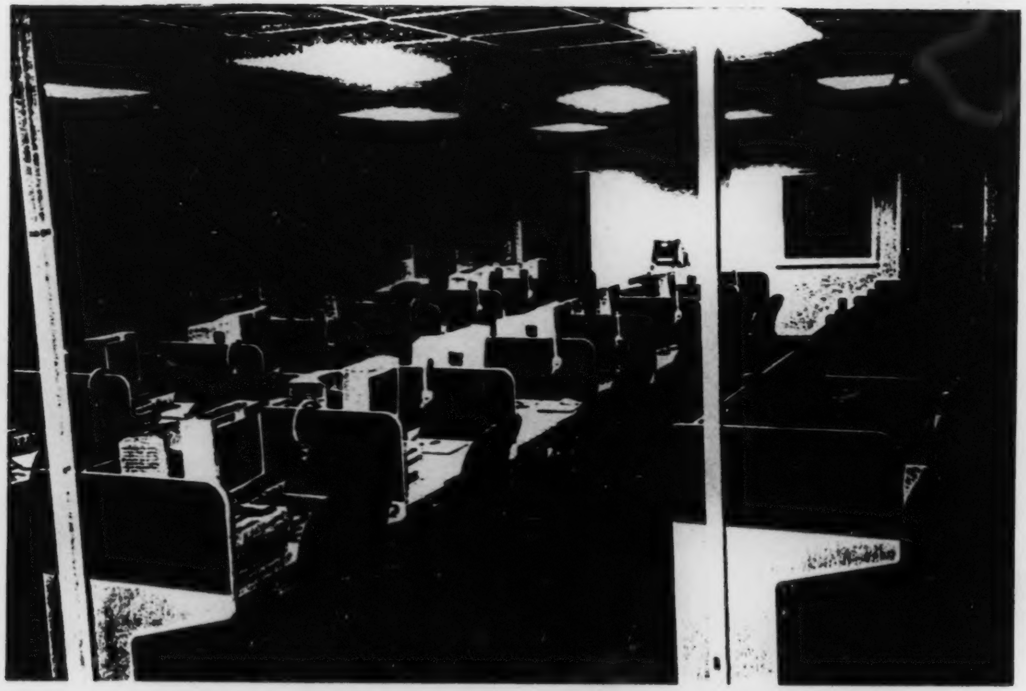


Figure 1 A View of the Renovated Language Laboratory
from its Northwest Corner

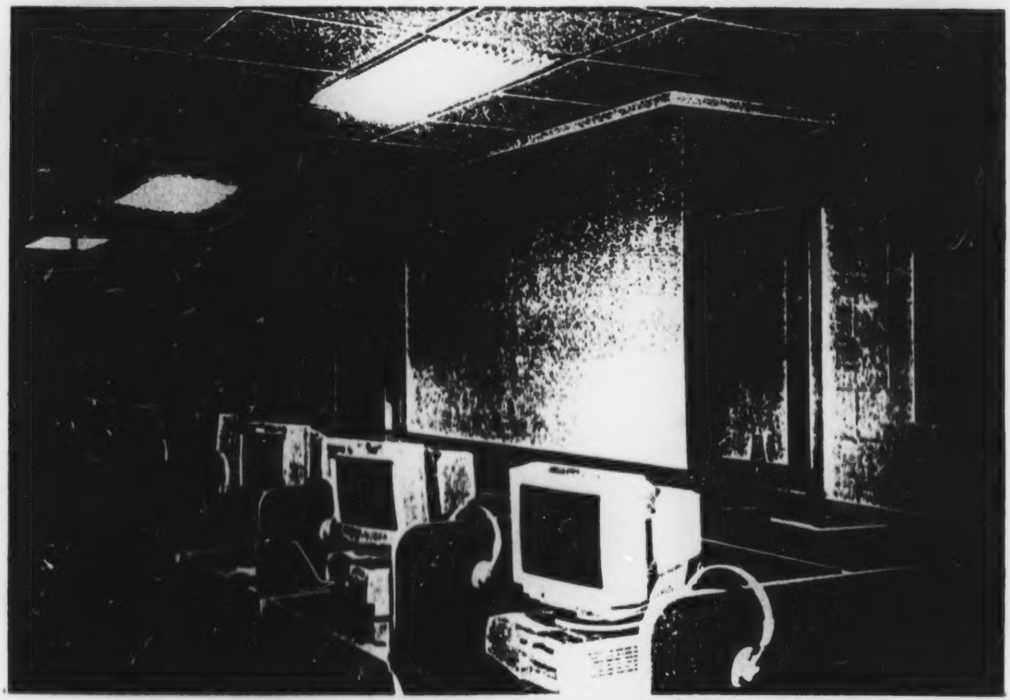


Figure 4 View of the Front of the Laboratory Showing the White Board and the Projection Screen

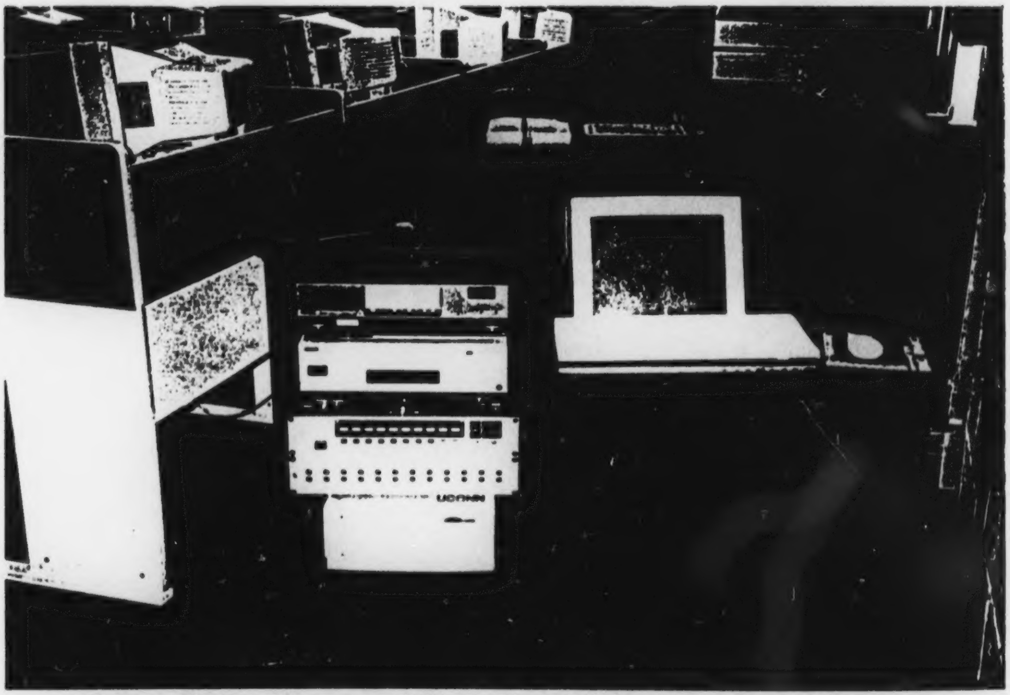


Figure 5 The Command Console, Origin of Projected Images

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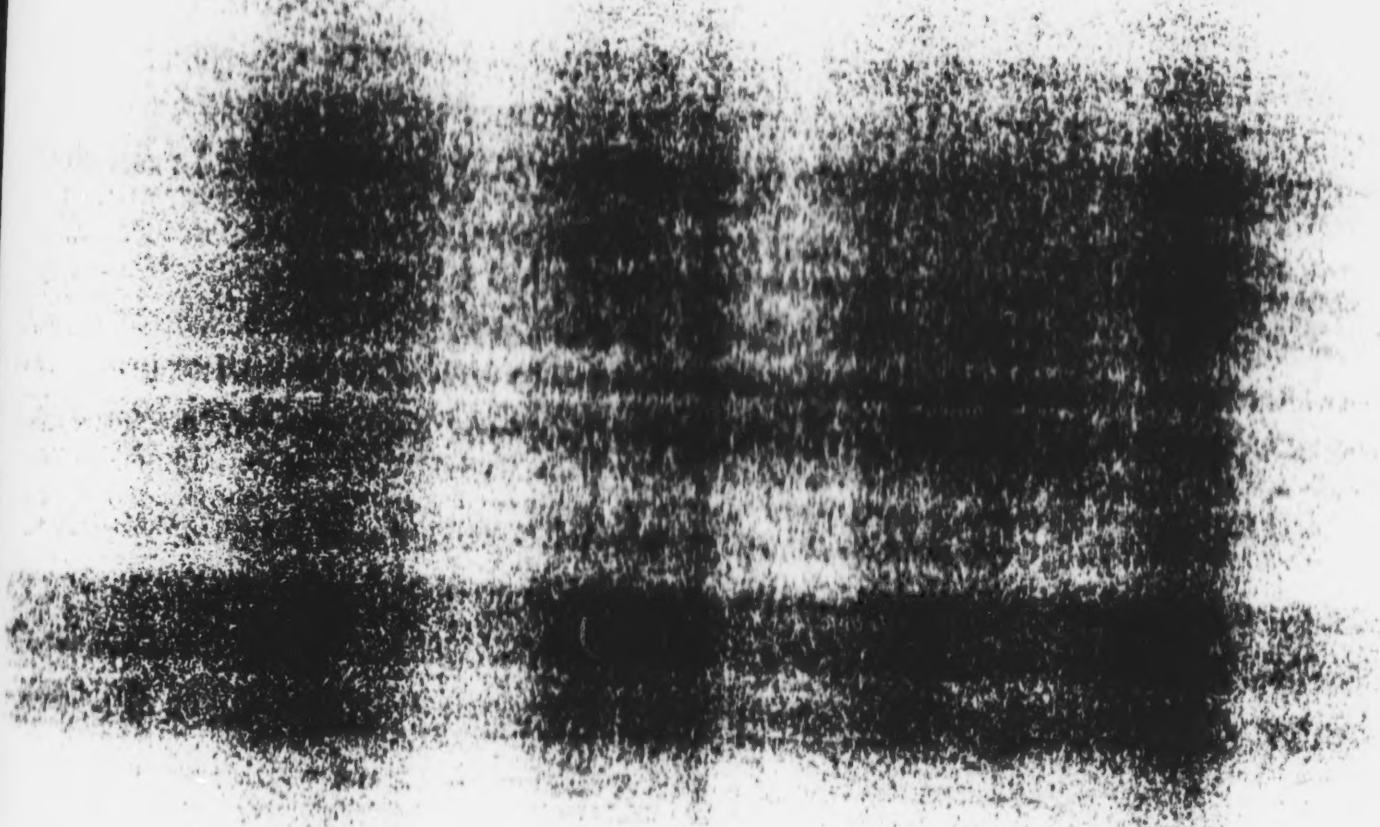
APPENDIX I



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- About...
- Curriculum
- Advisory Board and Words from Industry
- Internships
- Student Profiles
- Misc.
- Interactive Learning Modem

	School of Engineering	Dept. of Modern & Classical Languages	Guestbook	Comments

keywords: dual degree. study, abroad. internship, german

This page is under construction !

EUROTECH WebMaster*, *10/22/1996

You are visitor number **841** since May 3.

EUROTECH Directors

- Prof. Richard P. Long
- Prof. Maria-Regina Kecht

Associate Director

- Herman J. De Vries, Ph.D., assistant professor of German

Teaching Assistants

- Martin Geis
- Norbert Preis

Up EUROTECH

Norbert Preis*, *10/04/1996

EUROTECH Direktoren

- Prof. Richard P. Long
- Prof. Maria-Regina Kecht

Vize Direktor

- Herman J. De Vries, Ph.D., assistant professor of German

HiWis

- Martin Geis
- Norbert Preis

UP EUROTECH

Norbert Preis, 10/04/1996

Internships

- Report on Millstone Nuclear Power Station, by Laura Harris
- Trumpf, internship report by James Frey
- Johnson & Johnson, internship report by Brian Schwegler

EUROTECH

***Norbert Preis*, 10/04/1996**

Curriculum

Curriculum Description

Chemical Engineering

Computer Science and Engineering

Electrical and Systems Engineering

Mechanical Engineering

Civil and Environmental Engineering

Course Description

Syllabus German 221 Spring 1996

Engineer Presentations

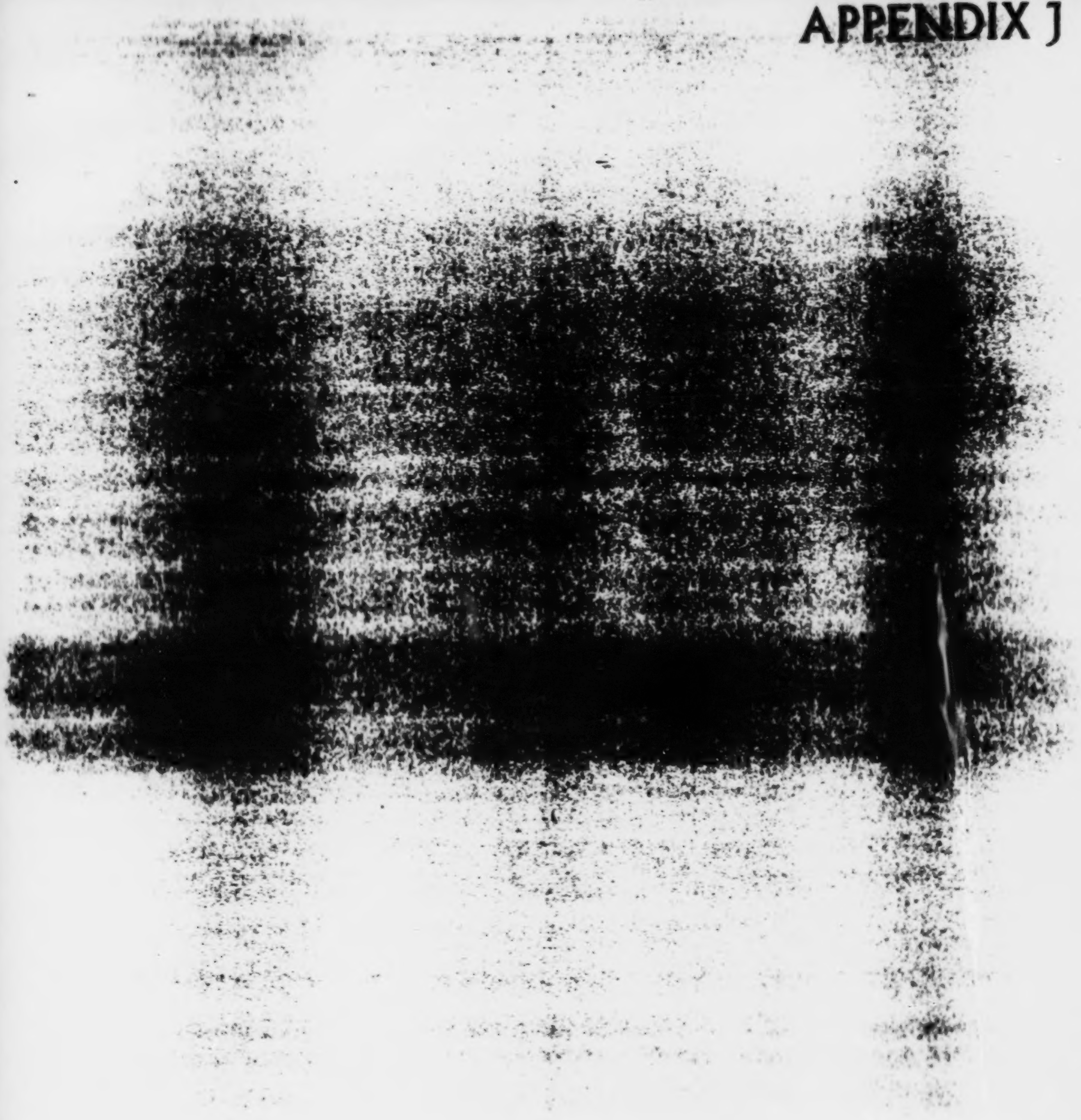
Company Tours

Torrington Company Tour

EUROTECH

***Norbert Preis*, 10/04/1996**

APPENDIX J



EUROTECH is your connection between America and Germany, the arts and the sciences, and between today and the future!

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EUROTECH has been made possible by a generous grant from the Fund for the Improvement of Post Secondary Education (U.S. Department of Education). The program has also received strong support from the University administration, the College of Arts and Sciences, the School of Engineering, and Connecticut industry.

University of Connecticut supports all federal and state laws that promote equal opportunity and prohibit discrimination.

Brochure Designed by Betty J. Surprenant
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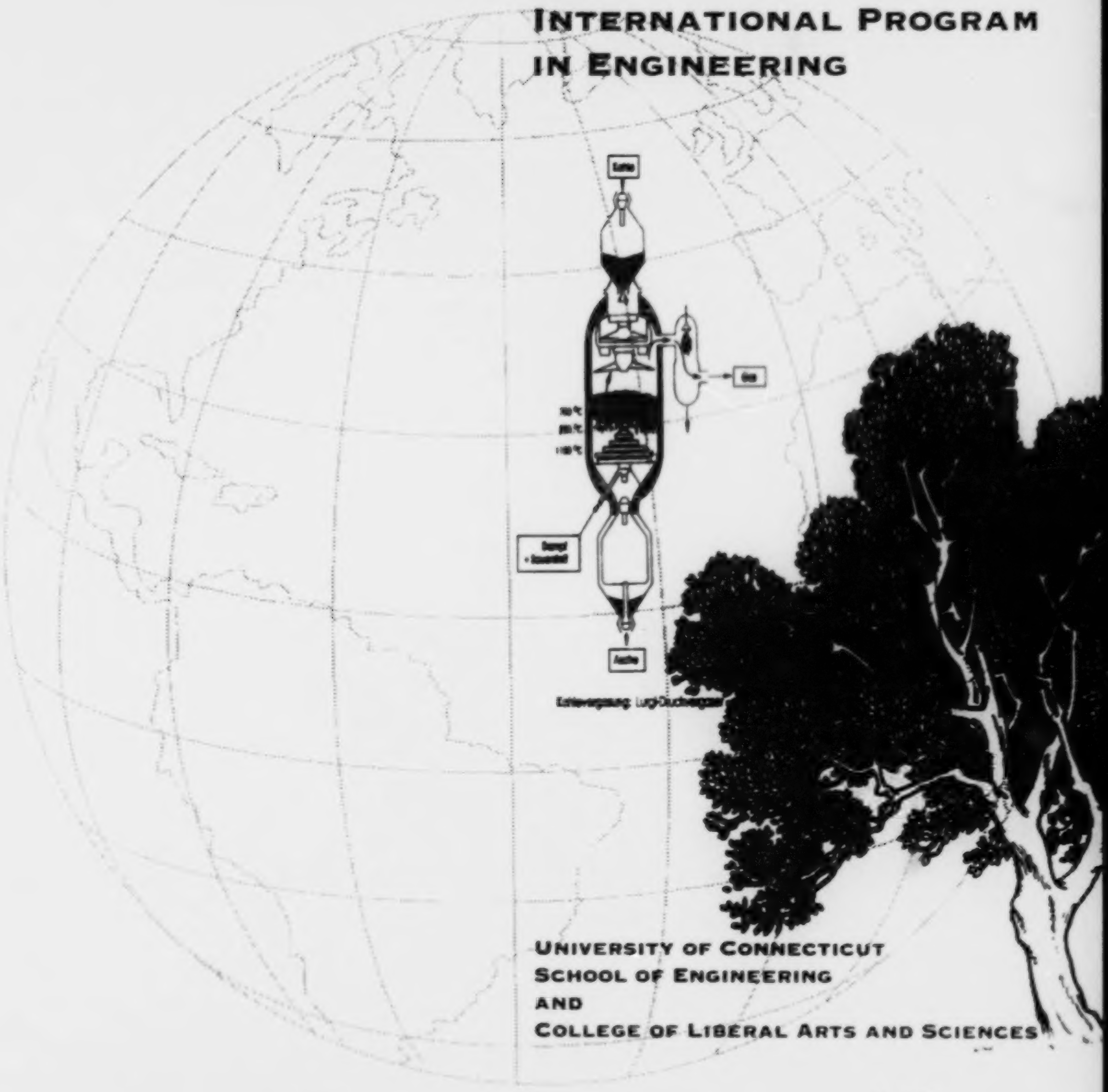
EUROTECH

AN INTERNATIONAL PROGRAM IN ENGINEERING



UNIVERSITY OF CONNECTICUT
SCHOOL OF ENGINEERING
AND
COLLEGE OF LIBERAL ARTS AND SCIENCES

EUROTECH is an innovative instructional program combining the study of Engineering with German. This new, five-year program includes a six-month internship in Germany and leads to a dual degree, a B.A. in German and a B.S. in Engineering.

EUROTECH IS THE RIGHT PROGRAM FOR YOU

- if you are a motivated student interested in an international career,
- if you want to combine math and science with a foreign language,
- if you like a challenge, whether it is a German culture class, a talk on environmental pollution presented in German, or an apprenticeship in a German company, and
- if you want a competitive edge after graduation.

GERMANY HAS LONG BEEN KNOWN FOR ITS EFFICIENT, HIGH-QUALITY MANUFACTURING. MORE RECENTLY, GERMANY HAS BECOME A LEADER IN ENVIRONMENTAL TECHNOLOGY. SO NOW MORE THAN EVER, IT MAKES SENSE FOR STUDENTS OF ENGINEERING TO STUDY AT THE CUTTING EDGE AND WORK WHERE ENVIRONMENTAL CONCERNS ARE VIEWED AS AN OPPORTUNITY FOR BUSINESS AND INDUSTRY.

◆

TODAY'S ENGINEERS MUST BE MORE SOPHISTICATED THAN EVER BEFORE. BUT TECHNICAL KNOW-HOW IS NOT ENOUGH. TO DEVELOP A SUCCESSFUL PRODUCT OR DESIGN A NOTABLE PROJECT, THEY MUST ALSO UNDERSTAND THE CULTURE, SOCIETY, AND LANGUAGE OF THE PEOPLE USING IT.

EUROTECH IS OUR RESPONSE TO THESE NEEDS:

- Students beginning any undergraduate program in the School of Engineering can participate in EUROTECH without prior knowledge of German—although some background certainly helps.
- Students learn engineering and German concurrently. They follow a customized course of study and receive personal academic guidance.
- Fundamentals of engineering are taught in a bilingual setting, where engineering professors with a command of the language conduct recitation sections in German, with an emphasis on environmental aspects of engineering.
- An internship in Germany offers valuable international work experience, increases proficiency in the language, and provides important preparation for the senior project.

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Questions often asked about

EUROTECH

International Engineering

University of Connecticut

1. How can an engineering student best prepare for a career as the marketplace becomes more global?

Many experts at the national level recommend that in addition to studying engineering, one should learn an appropriate foreign language. One of these languages is German, and one of the best ways to understand a language and its people is to spend time working in that country.

2. How can the student include this aspect of study in an engineering program at the University of Connecticut?

The University of Connecticut offers EUROTECH, a program that combines the study of engineering with German and offers the student an opportunity to experience the practice of engineering in another industrialized country.

3. What does EUROTECH contain?

EUROTECH is a 5 year dual degree program that includes:

- Engineering course work leading to a Bachelor of Science degree in engineering;
- German course work leading to a Bachelor of Arts degree in German; and
- A six month engineering internship with a firm in Germany.

4. What sort of practical experience does a EUROTECH student receive?

The experience is similar to a co–op job but in Germany. Generally each student will receive subsistence funds from the employing company to cover living expenses. We have talked to such companies as Mercedes Benz, Siemens, Audi, Bayer, Trumpf, and Index among others. All are willing to accept EUROTECH students as interns.

It is anticipated that opportunities for student summer employment before embarking for Germany will develop with firms in the USA to broaden and deepen the student's experience.

5. How do American companies view this program?

American firms feel the need for students with international capabilities. EUROTECH has an external advisory board having one–half of the members representing American firms and agencies.

The student completing this program will have a more marketable degree with a strong background in the principles of engineering and practical international experience.

6. Who is eligible to enroll in EUROTECH?

The EUROTECH Program is open to students in each of the undergraduate engineering programs at UCONN.

7. Must I have taken German in high school to enter the program?

No! Admission to EUROTECH requires no previous knowledge of German, but students who enter knowing some German begin at their appropriate level in the language.

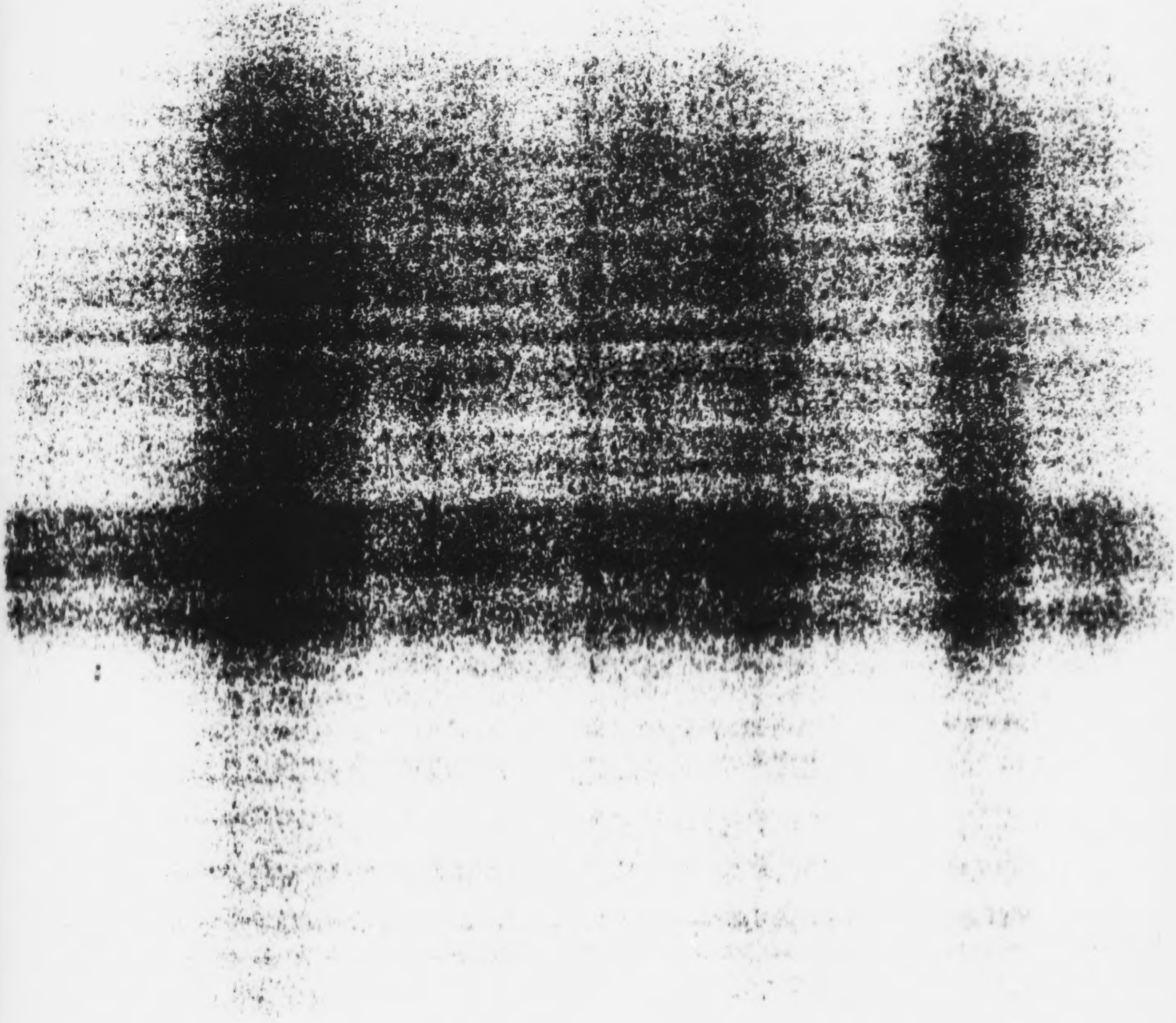
Technical vocabulary building is included. Several engineering professors are sufficiently fluent in the German language to conduct recitation sections of engineering courses in the language.

8. How do I enroll in EUROTECH?

Register for one of the GERM 131 sections designated "for engineers," and tell your instructor in the course and your engineering advisor that you are interested in EUROTECH. If you already know German, your instructor will test you and move you to the course appropriate for you level.

You can get a semester by semester list of all the courses in the EUROTECH Program by contacting one of the faculty members listed in this brochure.

APPENDIX K



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EUROTECH NEWSLETTER

Spring 1996
Number 1

An International Program in Engineering

Frühjahr 1996
Nummer 1

1881

THE EUROTECH PROGRAM

This is the premiere issue of a newsletter about the international engineering program at the University of Connecticut known as EUROTECH. In this newsletter we describe what EUROTECH is, why it was started, and where it is going. Subsequent issues will update our readers on future developments. In the spirit and purpose of EUROTECH, this newsletter is published in both English and German.

Today every serious national discussion of engineering education includes the need for our engineers to become proficient in other languages. EUROTECH began in the fall of 1993 to provide opportunities for students to take advantage of America's need for engineers with foreign language skills.

EUROTECH combines the study of engineering with German in five years of undergraduate work, linking the two majors at all levels of instruction. German-speaking engineers and engineering professors engage the students in German from the very beginning. The program requires no previous knowledge of German and is open to any qualified engineering student.

EUROTECH is a dual degree program in which the student completes: a B.A. in German, a B.S. in Engineering, and a six-month internship in Germany. The program was begun with a three-year grant of $250,000 from the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE). We have recently received an additional grant from the State of Connecticut's Yankee Ingenuity program to improve the language laboratory and assisit the engineering students in learning foreign languages.

Professor Richard P. Long of the Department of Civil and Environmental Engineering and Professor Maria-Regina Kecht of the Department of Modern and Classical Languages

DAS EUROTECH PROGRAMM

In dieser unserer ersten Ausgabe des Newsletters stellen wir das EUROTECH Programm, die Anfänge und die Zielsetzungen vor. In die nachfolgenden Ausgaben werden wir den Leser über Fortschritte und Entwicklungen informieren. Entsprechend der deutsch-amerikanischen Zielsetzung des Programms wird diese Informationsbroschüre zweisprachig veröffentlicht.

Heutzutage beschäftigen sich sämtliche Diskussionen im Ingenieurswesen auf nationaler Ebene mit der wachsenden Nachfrage nach Ingenieuren mit Fremdsprachenkenntnissen. Im Herbst 1993 entstand das EUROTECH Programm, um eben diese Nachfrage zu befriedigen.

Das EUROTECH Programm verbindet von Anfang an das Studium der Deutschen Sprache mit dem Ingeniuersstudium. Dabei werden die Studenten in ihren Bemühungen von deutschsprachigen Ingenieuren und den Professoren aus dem Bereich Ingenieurwissenschaften unterstützt. Jeder qualifizierte Student aus dem Bereich der Ingenieruswissenschaften kann dem Programm beitreten. Vorkenntnisse in Deutsch werden nicht vorausgesetzt.

Im Rahmen des EUROTECH Programms erwerben die Studenten zwei Abschlüsse. Zum einen erwerben sie den B.A. in Deutsch, zum anderen den B.S. in Ingenieurswesen. Desweiteren gehört zum Abschluß des EUROTECH Programms auch ein halbjähriges Praktikum in Deutschland. Das Programm wurde in den ersten drei Jahren durch Mittel in Höhe von $250.000 aus dem Fond zur Förderung der Hochschulbildung des US Bildungsministeriums [*U.S. Department for the Improvement of Post-Secondary Education (FIPSE)*] finanziert. Zusätzlich haben wir kürzlich einen Zuschuß vom Förderungsprogramm des Bundesstaates Connecticut [*State of Connecticut's Yankee Ingenuity program*] erhalten, um die Sprachlabore und die Betreuung der Studenten zu verbessern.

are co-directors of the program and share the administrative responsibilities.

To insure that the program meets industry's needs, EUROTECH's administrators invited the presidents and other key officials of German and U.S. firms to join an Advisory Board to oversee the program, assist in its development, and help the students prepare themselves properly for cross-cultural work. The board estimates that we must graduate a substantial number of students each year to satisfy the industry's needs in Connecticut alone.

FIPSE funds supported contacting German firms to prepare for the student internships and publicity about the program. The program directors have visited German industrial firms in the summers of 1994 and 1995. During these visits we discussed our program and determined the preparation that our students should have before beginning their internships in Germany. Our program was well received by the 26 companies that we visited, and we have incorporated their suggestions into the preparation of EUROTECH students. The students will be compensated during their internships abroad.

From the German companies we learned that our students should have some exposure to domestic industry before entering a foreign intership. We have helped most students arrange some summer work to give them some hands-on experience. One of our students, James Frey, writes about his summer job in an article below.

To insure that the students become familiar with the industrial setting, we try to arrange one or more visits to the companies represented on our advisory board. Jennipher Spears, a mechanical engineering student, reports on the visit during the fall of 1995 to the Torrington Co.

This issue also contains statements from the Deans of Engineering and Liberal Arts and Science.

Die Verwaltung des EUROTECH Programms liegt in den Händen der beiden Direktoren Professor Richard P. Long von der Fakultät für Bau- und Umweltingenieurswesen und Professorin Maria-Regina Kecht von der Fakultät für moderne und klassische Sprachen.

Um den Anforderungen der Industrie an die jungen Ingenieure gerecht zu werden, haben die EUROTECH Verantwortlichen einen Beratungsausschuß gegründet und die Präsidenten und Führungskräfte in Schlüsselpositionen deutscher und amerikanischer Firmen eingeladen diesem Ausschuß beizutreten. Das Ziel dieses Ausschusses ist es die Entwicklung von EUROTECH zu steuern und dafür zu sorgen, daß die Studenten auf die späteren Aufgaben richtig vorbereitet werden. Der Ausschuß erwartet, daß jedes Jahr eine genügend große Anzahl von Studenten abschließt, um allein den Bedarf der Industrie in Connecticut zu decken.

Der Zuschuß des FIPSE unterstützt, sowohl die Vorbereitung des Auslandsaufenthaltes der Studenten, als auch die Öffentlichkeitsarbeit des EUROTECH Programms. Die Programm-Direktoren haben 1994 und 1995 deutsche Industriebetriebe besucht und dabei die Möglichkeiten und die Voraussetzungen, die die Studenten erfüllen sollten, besprochen. Unter anderem wurde dabei auch eine Bezahlung der Praktikanten vereinbart. Alle 26 besuchten Firmen haben positiv auf die Initiative reagiert. Die Vorschläge und Wünsche, die dabei vorgebracht wurden, werden dazu benutzt, die Vorbereitung der Studenten auf das Praktikum zu optimieren.

Wie von den deutschen Betrieben vorgeschlagen, haben wir uns bemüht, für die Studenten Praktika zu organisieren, bevor sie das Auslandspraktikum antreten. Nachfolgend ist ein Bericht über seine Praktikumserfahrungen des EUROTECH Studenten James Frey abgedruckt.

Um sicherzustellen, daß die Studenten mit der Infrastruktur der Betriebe vertraut werden, veranstalten wir jedes Semester mehrere Betriebsbesichtigungen bei den im Beratungsausschuß beteiligten Firmen. Diese Ausgabe der Informationsbroschüre beinhaltet auch den Bericht von Jennipher Spears (Maschinenbaustudentin) über den Besuch der Torrington Company, während des Herbstsemesters 1995.

Wir danken dem Dekan der Ingenieursschule und dem Dekan der Geistes-, Sozial- und Naturwissenschaftlichen Fakultät für ihre Grußworte.

A Word from the Dean of the School of Engineering

The University of Connecticut is dedicated to offering the best undergraduate engineering program possible. It is clear that the engineer of the future will have to function in the global marketplace. Today every national discussion of engineering education includes the need for our engineers to become proficient in other languages. An example is the 1992 Report of the President's Council of Advisors on Science and Technology in which, "placing stress on educating scientists and engineers in key foreign languages," was one of the five recommendations it contained.

To meet some of the needs of the modern engineer, the University of Connecticutt developed the EUROTECH Program and offered it for the first time in the fall of 1993. It quickly developed support from industry and government. All indications are that there already exists a substantial demand for graduate engineers with these credentials. The experience of working in another culture will certainly enhance the development of the young engineer.

Harold D. Brody

A Word from the Dean of the College of Liberal Arts and Sciences

EUROTECH is an initiative that is important both to the College of Liberal Arts and Sciences and the School of Engineering. It is a program that, through integrated course work and programming, bridges schools and disciplines and blends the classroom with the workplace. The EUROTECH program with its international focus reflects some of the key goals and aspirations of the University of Connecticut's blueprint for the future: *BEYOND 2000: CHANGE*. Students involved in the program have the unique opportunity to earn two degrees, one in German and the other in Engineering.

But the beauty of EUROTECH is its integrated character and the close collaboration of the faculty in German and in Engineering. An internship in Germany at a German company is the high point of this remarkable educational experience. University of Connecticut students, with language skills that match their expertise in engineering, will be ready to play important roles in the global village. It is a program of which the College of Liberal Arts and Sciences is a proud participant.

Paul Goodwin

Grußwort des Rektors der Ingenieurswissenschaften

Es ist eine Verpflichtung für die Universität von Connecticut, das bestmögliche Programm für die Undergraduate-Ingenieursstudenten anzubieten. Es ist offensichtlich, daß sich der Ingenieur der Zukunft auf dem globalen Markt zurechtfinden muß. Heutzutage beschäftigen sich sämtliche nationalen Diskussionen im Ingenieruwesen mit dem Bedarf von Ingenieuren mit Fremdsprachenkenntnissen. Ein Beispiel dafür ist der Bericht der Kommission des US-Präsidenten für Wissenschaft und Technologie, in welchem eine der fünf Anforderungen, die Ausbildung von Ingenieuren und Wissenschaftlern in Sprachen führender Industrienationen ist. Um einige der Ansprüche an einen modernen Ingenieur zu erfüllen, entwickelte die Universität von Connecticut das EUROTECH Programm und bot es im Herbst 1993 zum ersten Mal an. Sehr schnell fand EUROTECH Unterstützung bei Industrie und Regierung. Alle Anzeichen sprechen dafür, daß bereits jetzt eine sehr starke Nachfrage nach Ingenieuren mit Fremdsprachenkenntnissen in ihrem Fachgebiet besteht. Die Erfahrung in einer anderen Kultur zu arbeiten, wird die Entwicklung der jungen Ingenieure sicherlich postiv beeinflußen.

Harold D. Brody

Grußwort des Rektors der Geistes-, Sozial und Naturwissenschaftlichen Fakultät

EUROTECH ist eine Initiative, die sowohl für das College of Liberal Arts and Sciences als auch für die Ingenieursschule sehr bedeutend ist. Es verbindet durch integrierte Kurse die beiden Fakultäten und die Fachgebiete und es ermöglicht eine Kombination von Unterricht und Praxis. Das EUROTECH Programm repräsentiert mit seinem internationalen Schwerpunkt einige der Ziele des Zukunftprogramms der Universität von Connecticut: BEYOND 2000: CHANGE. Die Studenten des Programms haben die einmalige Gelegenheit zwei Abschlüsse zu erreichen, einen in Deutsch und einen im Ingenieurbereichs. Aber der eigentliche Punkt, der das EUROTECH Programm auszeichnet, ist die enge Zusammenarbeit der Lehrkräften der Deutsch- und Ingenieursschule. Der Höhepunkt dieser bemerkenswerten Ausbildung für die Studenten ist ein Praktikum bei einer deutschen Firma. Die Studenten der Universität von Connecticut – mit Sprachfähigkeiten in Ihrem Fachgebiet – werden eine wichtige Rolle im stetig zusammenwachsenden globalen Markt spielen. Die Geistes-, Sozial und Naturwissenschaftliche Fakultät ist stolz an diesem Programm teilzunehmen.

Paul Goodwin

German Speaking Engineers and Scientists in the Classroom

An important feature of EUROTECH is the participation of engineers and scientists who instruct – in German – in three courses of the program. Instructors from the German Section at UConn help the students develop the proper technical vocabulary to understand and appreciate these lectures. During the academic year 1995-96 all three courses were offered: German 220, 221, and 222. The lectures in German 220, German Recitation in Applied Mechanics, are usually given in the fall by Prof. Long Solecki of the UConn School of Engineering. The following engineers and scientists gave presentations in German 222, Fields of Technology, during the fall of 1995:

- Dr. Jürgen Lahrs, *Bayer Corporation*: "Heat Transmission and the Use of Similitude Theory"
- Kai Schüler (MAN Roland): "Industrial Serigraphy"
- Dr. Günther Schubert, *PTR Precision Technologies Inc.*: "Welding by Electron Beam"
- Prof. Paul Klemens, *Department of Physics University of Connecticut*: "Heat Conducting Capability of Solids"
- Wolfgang Bürmann, *Department of Physics, University of Connecticut*: "Structural Analysis of Soil Samples by X-Ray"

German 221, Introduction to the Sciences in German, is currently offered (Spring 1996). We look forward to presentations by the following engineers and scientists:

- Wolfgang Bürmann, *Department of Physics, University of Connecitcut*: "Chernobyl Fallout: Behavior of Cesium in various Ecosystems"
- Klaus Dietel, *MAN Roland*, t.b.a.
- Wilfried Meier, *Sikorsky Aircraft*, t.b.a.
- Klaus Voos, *Index Corporation*, "The Developement of the Autolathe and Current Technology of the Computerized Lathe"

FROM THE EUROTECH STUDENTS...

Activities involving practical aspects are designed to introduce the students to industry and stimulate their interest in engineering. One of these activities is plant tours. Another is the summer internships in the USA. Jennifer Spears reports on a trip to the Torrington Co. and James Frey reports on his summer internship with Trumpf in Farmington, CT.

Deutschsprachige Ingenieure und Wissenschaftler ergänzen den Unterricht

Das EUROTECH Programm beinhaltet in drei der angebotenen Kurse mehrere Vorträge, die von deutschsprachigen Ingenieuren und Wissenschaftlern gehalten werden. Die Studenten werden von ihren Deutschprofessoren auf diese Vorlesungen vorbereitet. Dabei wird ihnen das nötige technische Vokabular für die Vorträge nahegebracht. Im akademischen Jahr 1995/96 wurden alle drei Kurse angboten: German 220, 221 und 222. Die Vorträge im Kurs German 220 werden in der Regel von den Professoren Long und Solecki von der Fakultät für Ingenieruswissenschaften gehalten. Während des Wintersemsters 1995 im Kurs German 222, Technologiefelder, wurden die Vorträge von den folgenden Ingenieuren und Wissenschaftlern gehalten:

- Dr. Jürgen Lahrs, *Bayer Corporation*: "Wärmeübertragung und der Nutzen der Ähnlichkeitstheorie"
- Kai Schüler *(MAN Roland)*: "Industrieller Siebdruck"
- Dr. Günther Schubert, *PTR Precision Technologies Inc.*: "Schweißen mit dem Elektronenstrahl"
- Prof. Paul Klemens, *Fakultät für Physik an der Universität von Connecticut*: "Wärmeleitfähigkeit fester Körper"
- Wolfgang Bürmann, *Fakultät für Physik an der Universität von Connecticut*: "Röntgenabsorptionsstrukturanalyse von Umweltproben"

Im Frühjahrssemester 1996 wird der Kurs German 221, Einführung in die Wissenschaft, angeboten. Wir freuen uns auf die Vorträge der folgenden Ingenieure:

- Wolfgang Bürmann, *Fakultät für Physik an der Universität von Connecticut*: "Tschernobyl Fallout: Verhalten des Cäsiums in verschiedenen Ökosystemen"
- Klaus Dietel, *MAN Roland*, N.N.
- Wilfried Meier, *Sikorsky Aircraft*, N.N.
- Klaus Voos, *Index Corporation*, "Die Entwicklung der Drehautomaten und der heutige Stand der Technik computergesteuerter Drehautomaten"

VON DEN EUROTECH STUNDENTEN...

EUROTECH bietet etliche Aktionen an, um die Studenten auf spätere Aufgaben vorzubereiten und um ihnen die praktische Seite ihres

Tour of The Torrington Company

A Report by Jennipher Spears

On December 6, 1995, a group of EUROTECH students visited the Torrington Company (Torrington, Connecticut) on a trip guided by Dr. Strack. The Torrington Company – a division of the worldwide conglomerate Ingersoll Rand – is one of the largest manufacturers of bearings. Ingersoll Rand is an international corporation specializing in technical fields, and it is listed at #130 on *Fortune* magazine's top 500 companies in the world. The division of Ingersoll Rand in Connecticut specializes in bearings and automotive components.

Upon arrival at the Torrington Company the group was immediately met by Cameron Gardella, one of the chief engineers. He brought the enthusiastic students to a small conference room where they met two manufacturing engineers, Roland Wagner and Hans Fürsattel. Mr. Wagner began the presentation with a brief history of the Torrington Company and Ingersoll Rand, showing how the companies have grown and describing their current activities. He then handed the presentation over to Hans Fürsattel, and both engineers took the students on a tour throughout the plant. Both the presentation and the tour were given completely in German.

The students were fascinated by much of what they saw. They were also amazed by how friendly all the employees were and the relaxed attitude. Some of the machines used to produce the bearings, though well over twenty years old, are still the most efficient machines for their purpose. Also, many of the conveyor systems are technically ingenious. The German-speaking employees were very impressed at how much technical German the students could understand.

The tour ended back in the conference room where refreshments awaited the group. After a short discussion period, the group headed over to the company museum, which proved to be a

Studiums zu zeigen. Zwei Beispiele für solche Aktivitäten sind Betriebsbesichtigungen und Praktika. Im folgenden berichten Jennipher Spears über die Besichtigung der Torrington Co. und James Frey über sein Sommerpraktikum bei der Firma Trumpf in Farmington, Connecticut.

Betriebsbesichtigung bei der Torrington Company

Ein Bericht von Jennipher Spears

Am 6. Dezember 1995 besuchte eine Gruppe von EUROTECH-Studenten unter der Leitung von Dr. Strack die Torrington Company in Torrington, Connecticut. Die Torrington Company, die Teil des technisch orientierten Weltkonzerns Ingersoll Rand ist, ist eine der größten Hersteller von Lagern. Der Konzern befindet sich auf dem Platz 130 der 500 größten Firmen der Liste des Magazins *Fortune*. Die Tochterfirma in Connecticut hat sich auf Lager und Automobilkomponenten spezialisiert. Die Studentengruppe wurde von Cameron Gardella begrüßt, einem der Chefingenieure. Er brachte die interessierte Gruppe zu einem kleinen Konferenzraum, wo bereits zwei der Produktionsingenieure, Roland Wagner und Hans Fürsattel, auf sie warteten. Herr Wagner begann seinen Vortrag mit einer kurzen Darstellung der Torrington Company und von Ingersoll Rand. Er beschreib ihren historischen Aufbau und die gegenwärtigen weltweiten Aktivitäten. Er übergab dann die Leitung an Herrn Hans Fürsattel, und beide Ingenieure führten dann die Gruppe durch die Firma. Der Vortrag und die Führung waren auf deutsch. Während der Führung sah die Gruppe eine Vielzahl interessanter Dinge.

Die Gruppe war überrrascht von der Freundlichkeit der Angestellten und der entspannten Atmosphäre. Einige der zur Herstellung von Lagerkomponenten benutzten Maschinen waren über 20 Jahre alt, aber immer noch die effizientesten auf diesem Gebiet. Viele der Komponententransportprobleme in der Firm waren ausgesprochen intelligent gelöst. Die deutschspra-

quite interesting place. Inside the museum were samples of all of the different types of bearings the company produces as well as pictures and actual models of the mechanisms for which the bearings are made. The bearings ranged in size from ones tiny enough fit on a thumb nail to gigantic bearings over three feet high and moveable only crane. The trip ended in the museum. The students thanked their gracious hosts for their time and left the Torrington Company feeling they had taken a very worthwhile trip.

Editor's note:
Jennifer Spears a mechanical engineering student is in her sixth semester of EUROTECH. She worked for Index Corporation during her internship in 1995.

Internship Report by James Frey

I am a third year student at the University of Connecticut. My majors are mechanical engineering and German, and I participate in the EUROTECH program. Through EUROTECH one can combine the study of various scientific specialities with German. Most of the students in the courses are in engineering. Through EUROTECH it is possible to find internships with German firms. Last summer I received such a position at Trumpf (Farmington, CT) where I worked as an intern from June through August. Trumpf is part of the world wide operation of the Trumpf firms with the home office in Ditzingen, Germany. At Trumpf America NC laser machines and punching machines of highest quality are planned, manufactured, and tested. These machines are sold throughout the entire world. In other departments hand tools, bending machines and other apparatuses are produced.

chigen Ingenieure waren beeindruckt von den Deutschkenntnissen der Studenten.

Die Führung endete im Konferenzraum, wo bereits Erfrischungen auf die Gruppe warteten. Nach einer kurzen Diskussion des Gesehenen ging die Gruppe zum Firmenmuseum weiter. Das Museum war überaus interessant. Im Museum gab es Muster der verschiedenen Lagertypen, die von der Firma hergestellt werden, sowie Bilder und Modelle der technischen Einrichtungen, für die die Lager jeweils produziert werden. Die Größe der Lager reichte von Daumennagelgröße bis zu solchen mit einem Durchmesser von über einem Meter, die man nur mit einem Kran bewegen kann. Die Führung endete im Museum. Die Studenten bedankten sich herzlich bei ihren Gastgebern für deren Zeit und Hilfsbereitschaft und verließen die Torrington Company mit der Überzeugung, während ihres Aufenthalts vieles gelernt zu haben.

Bemerkung des Herausgebers:
Jennifer Spears ist eine Maschinenbaustudentin und im sechsten Semester des EUROTECH Programms. Sie arbeitete während ihres Praktikums im Sommer 1995 bei der Index Corporation.

Praktikumsbericht von James Frey

Ich bin Student im sechsten Semester an der University of Connecticut. Meine Hauptfächer dort sind Maschinenbau und Deutsch, und ich nehme am EUROTECH Programm teil. Durch EUROTECH können verschiedene naturwissenschaftliche Fächer auch mit Deutsch zusammen studiert werden. Die meisten Teilnehmer in den Kursen sind jedoch Studenten der Ingenieurswissenschaften. Durch EUROTECH ist es möglich, Praktika bei deutschen Firmen zu finden. Letzten Sommer habe ich so eine Stellung bekommen.

Von Juni bis Ende August 1995 hatte ich die große Gelegenheit, als Praktikant bei Trumpf America zu arbeiten. Trumpf liegt ungefähr 15 km südwestlich von Hartford in Farmington, CT und ist ein Teil der weltweit operierenden Firma Trumpf, die in Ditzingen beheimatet ist. Bei Trumpf America werden NC Lasermaschinen und Stanzmaschinen von höchster Qualität geplant, produziert und geprüft. Diese Maschinen werden in der ganzen Welt verkauft. In weiteren Abteilungen werden Handwerkzeuge, Biegemaschinen und andere Geräte produziert. Während des Sommers arbeitete ich als Praktikant in der Entwicklungsabteilung dieser Firma. Etwa fünfzehn Ingenieure arbeiten dort, von denen sieben Maschinenbauingenieure sind.

I worked as an intern in the development section of this firm. About fifteen engineers work there, seven of whom were mechanical engineers. All the engineers used computers to design and draft. I had a work station with a Unix unit, and I spent the first two weeks learning a Hewlett-Packard CAD program. As soon as I was familiar with the system, my supervisor began giving me real projects. Usually these projects concerned parts of the laser machines that needed modifications. The parts that I designed were all from sheet metal, because Trumpf machines are especially suitable to process sheet metal. Which brings up an interesting fact; Trumpf uses its own products, to manufacture new products. One of the biggest advantages of this is that machines in actual production can be used for testing. It is true, moreover, that engineers work with technicians. The technicians often have ideas we can use to make the machines better, safer, or cheaper. I enjoyed talking with the technicians, because most were Germans, and I could improve my German. This internship was an experience I will not soon forget, and I recommend every student in engineering to complete an internship.

Editor's note: James Frey plans to study a semester abroad in addition to doing his German internship.

Alle Ingenieure benutzten Computer um zu planen und zu zeichnen. Ich habe auch eine solche Unix-Einheit als Arbeitsplatz bekommen. Während der ersten zwei Wochen arbeitete ich daran, unser Hewlett-Packard CAD-Program kennenzulernen. Sobald ich damit vertraut war, gab mein Chef mir richtige Projekte. Gewöhlich hatten diese Projekte mit Teilen von Lasermachinen zu tun, die wir technisch verändern mußten. Die Teile, die ich entworfen hatte, waren alle aus Blech, denn Trumpf-Maschinen sind besonders gut geeignet, Blech zu bearbeiten. Das bringt eine interressante Tatsache zur Sprache: bei Trumpf nutzt man die eigenen Produkte, um neue Produkte herzustellen. Einer der größten Vorteile davon ist es, daß man die Maschinen im wirklichen Produktionsablauf testen kann.

Überdies ist es so, daß wir – die Ingenieure – mit Technikern zusammen arbeiten. Die Techniker haben sehr oft Ideen, die wir nutzen können, um die Maschinen besser, sicherer oder billiger zu machen. Ich muß auch sagen, daß es mir viel Spaß gemacht hat, mit den Technikern zu reden, weil sie meistens Deutsche waren und ich dadurch mein Deutsch verbessern konnte. Dieses Praktikum war ein Erlebnis, das ich nicht bald vergessen werde, und ich empfehle jedem Studenten der Ingenieurswissenschaften, so ein Praktikum zu absolvieren.

Bemerkung des Herausgebers: *James Frey beabsichtigt zusätzlich zu seinem Praktikum in Deutschland, auch ein Semester in Deutschland zu studieren.*

EUROTECH: An International Program in Engineering

University of Connecticut
EUROTECH, U-57
Storrs, CT 06269

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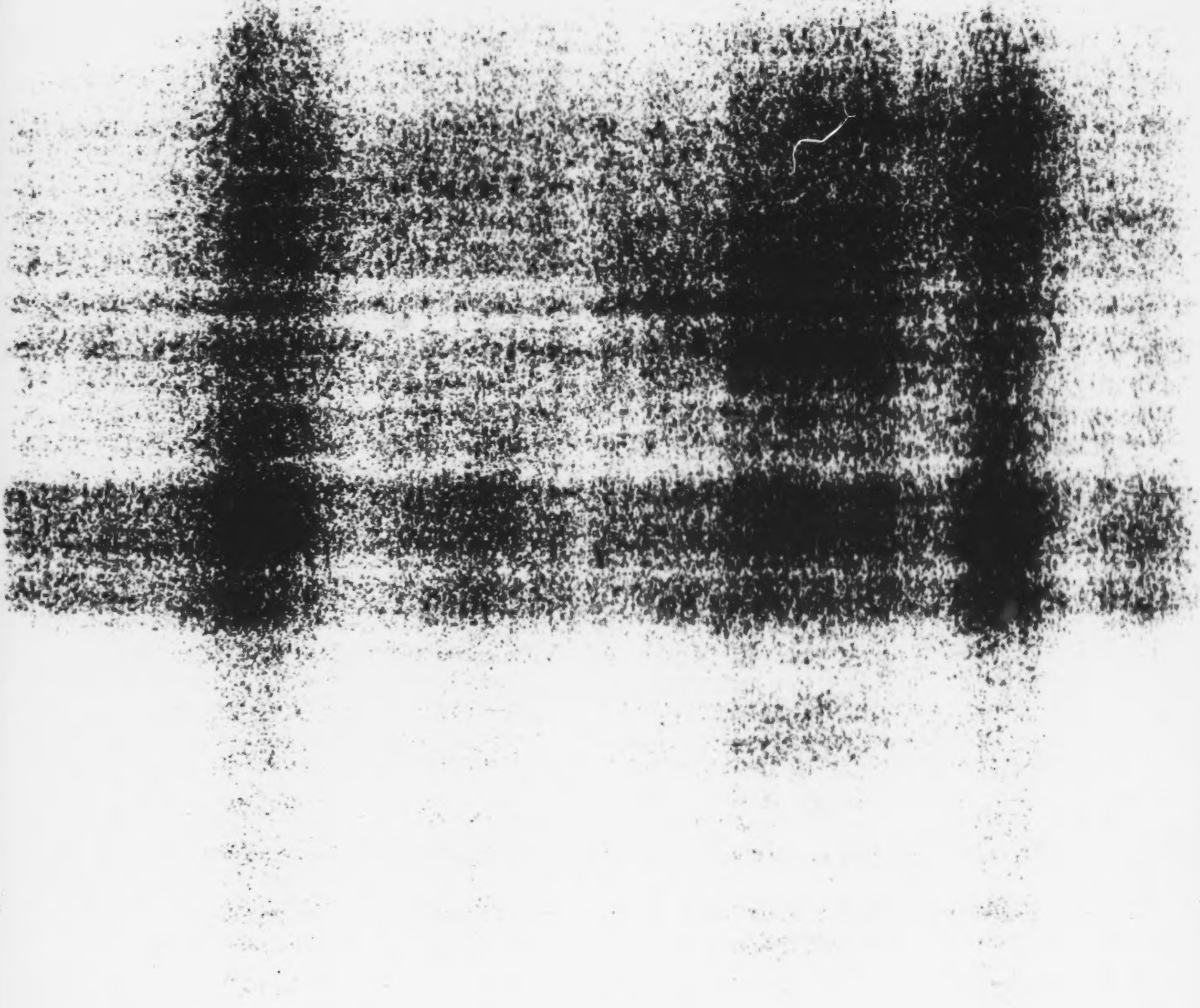
EUROTECH NEWSLETTER

APPENDIX L.



Wie der Käfer laufen lernte: Die Erfolgsgeschichte vom Volkswagen Beetle

EUROTECH

PLING
KLING
FERTIG! PERFEKT! EIN MEISTERWERK!
ABER WOZU IST ES GUT?
ALS ARMREIF ODER ALS RÜSSELRING?
ALS TELLER ODER ALS HUT?
©Rüssel.IIII 89/2/5
MIST! DAS DING IST ZU NICHTS ZU GEBRAUCHEN! ICH GEB DAS ERFINDEN AUF UND WERDE WIEDER MAMMUT-HIRTE
KRACH
HM... NICHT SCHLECHT! ABER IRGENDWAS FEHLT NOCH! WENN ICH NUR WÜSSTE, WAS...

EUROTECH

A video history of the world's most famous car!

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Friday Sept. 27 4:00 pm

JHA 119

EUROPA EUROPA

A TRUE STORY
(Hitlerjunge Salomon)

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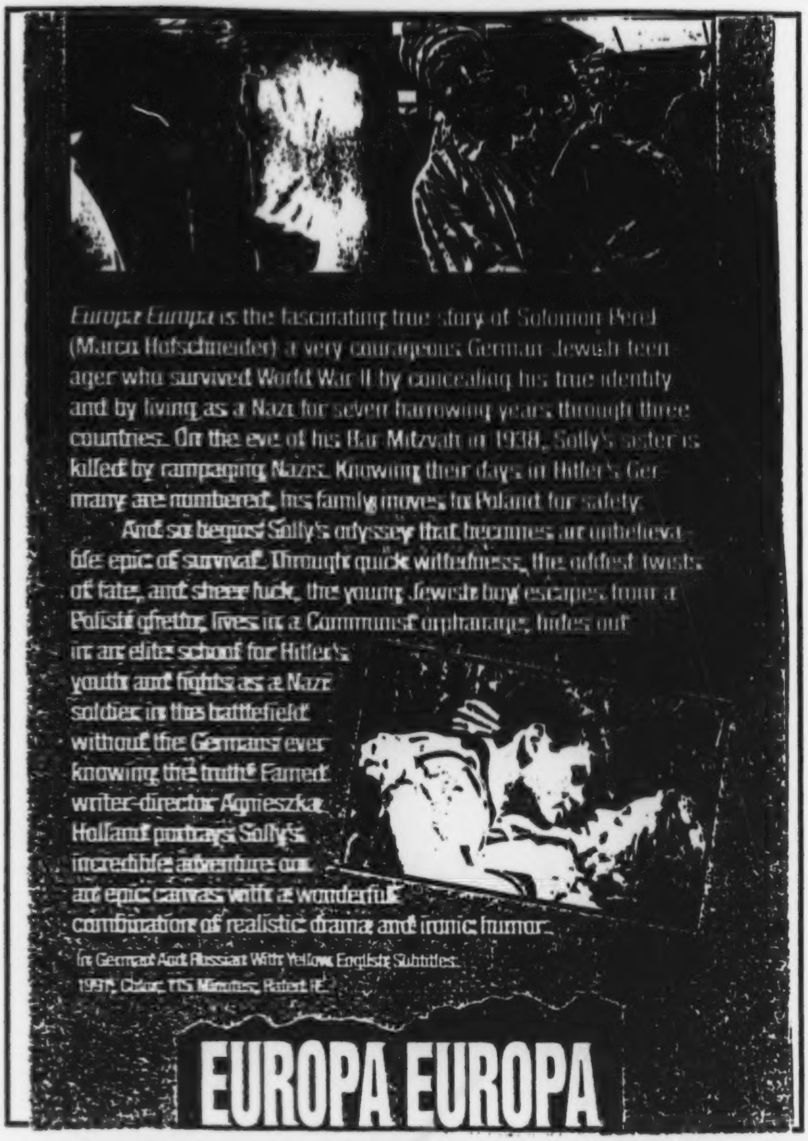

Europa Europa is the fascinating true story of Solomon Perel (Marco Hofschneider) a very courageous German Jewish teenager who survived World War II by concealing his true identity and by living as a Nazi for seven harrowing years through three countries. On the eve of his Bar Mitzvah in 1938, Solly's sister is killed by rampaging Nazis. Knowing their days in Hitler's Germany are numbered, his family moves to Poland for safety.

And so begins Solly's odyssey that becomes an unbelievable epic of survival. Through quick wittedness, the oddest twists of fate, and sheer luck, the young Jewish boy escapes from a Polish ghetto, lives in a Communist orphanage, hides out in an elite school for Hitler's youth and fights as a Nazi soldier on the battlefield without the Germans ever knowing the truth! Famed writer-director Agnieszka Holland portrays Solly's incredible adventure on an epic canvas with a wonderful combination of realistic drama and ironic humor.

In German And Russian With Yellow English Subtitles.
1991, Color, 115 Minutes, Rated R.

EUROPA EUROPA

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In German with English Subtitles

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PRACTICE YOUR GERMAN!

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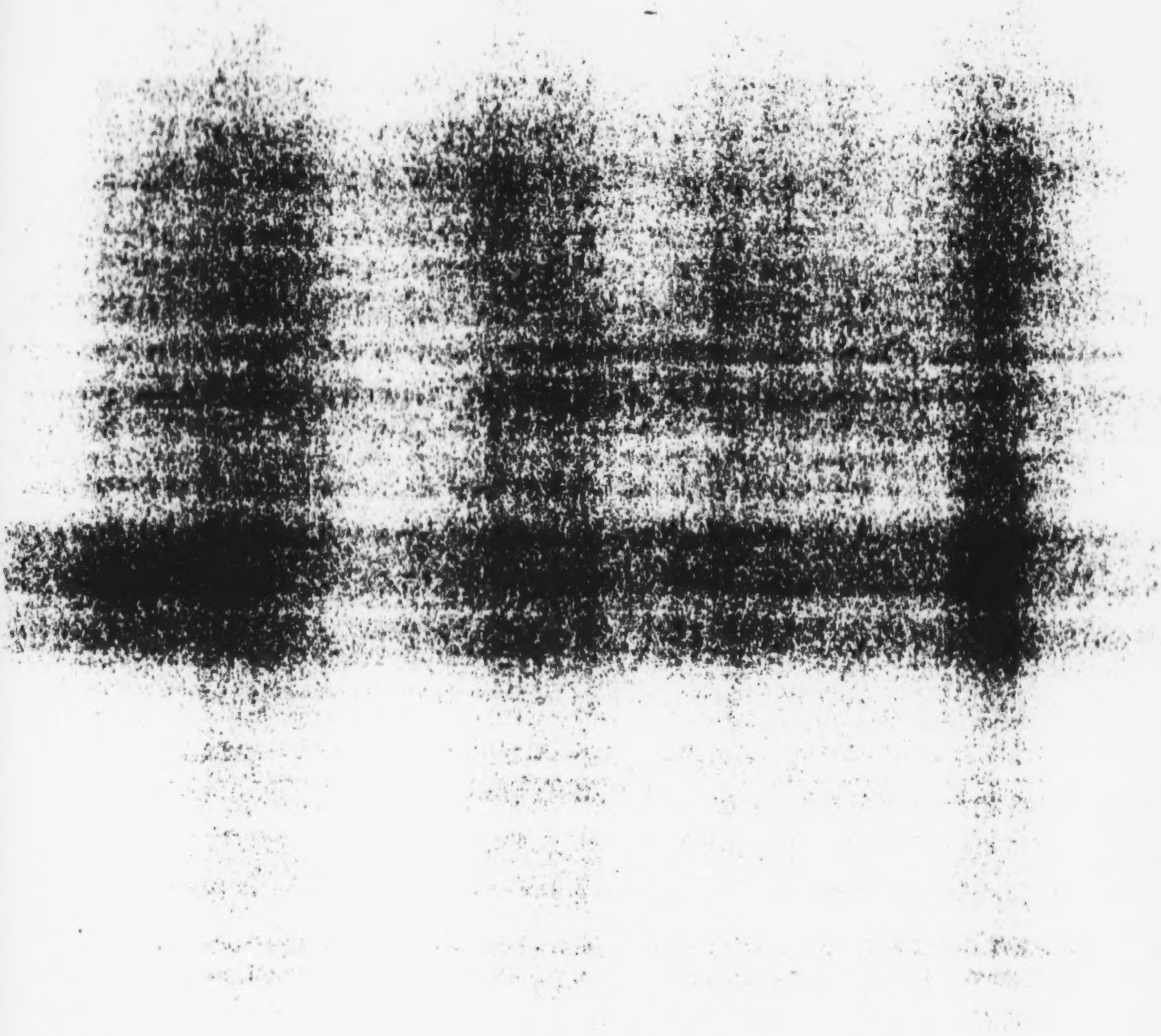
Thursday Nov. 7 8:00 pm
JHA 143

APPENDIX M



EUROTECH

Dual Degree Program in Engr and German (Work Period in Germany)
Engineering Major - Civil & Environmental Engineering
November 11, 1996

Fall Course	Cr.	Spring Course	Cr.
	FRESHMAN YEAR		
Germ 131-Elem. Germ.I(Gp.1)	4	Germ 132-Elem. Germ. II(Gp.1)	4
Chem 127Q-General Chem(Gp.8)	4	Chem 128Q-General Chem(Gp.8)	4
Math 115Q-Calculus(Gp.3)	4	Math 116Q-Calculus II(Gp.3)	4
Engr 150C-Intro. to Eng.I	3	Engr 151 or Geol 102	3/4
Engl 105-English Comp.(Gp.2)	3	Engl 109-Lit. & Comp.(Gp.2)	3
	18		18/19
	SOPHOMORE YEAR		
Germ 133-Inter. Germ I(Gp.1)	4	Germ 134-Inter.Germ.II(Gp.1)	4
Phys 151-Phys. for Engineers I	4	Phys 152-Phys. for Eng.II	4
Math 210-Multivar.Calc.(Gp.3)	4	Math 211-Elem. Diff. Eq.	3
CE 214-Applied Mechanics I	3	CE 215-Applied Mechanics II	3
Germ 220 App.Mech.Rec.in Germ	1	Germ 221 Intro.to Sci.in Germ	1
Hist 100-Roots of West.Exp.	3	Social Science(Gp.7)	3
OR			
Hist 101-Modern Europe (Gp.5)	3		
	19		18
	JUNIOR YEAR		
Germ 233-Adv. Language Skills	3	Germ 234-Adv.Lang.Skills II	3
Germ 222 Fields of Tech.	1	CE 260-Unit Ops.in H_2O Qual.	3
CE 297-Fluid Mechanics	3	or	
CE 263P-Envir.Eng. Fund.	3	CE 234-Basic Struc. Analysis	
CE 287-Mechanics of Materials	3	CE 236-Basic Struc. Design	3
CE 271-Elementary Surveying	4	CE 254-Elem.of Trans.Fac.Des.	3
		CE 222-Phys. Char. of Matls.	3
		or	
		CE 262-Env.Engr.Lab	
	17	Phil 104-Phil&Soc Ethics(Gp.6)	3
			18
	PRE-SENIOR		
Germ 251-Germ.Cult.& Civ.(Gp.5A)	3	Germ 281-Germ Film&Cult(Gp.4B)	3
Prof. Req	3	Prof. Req.	3
Prof. Req.	3	Prof. Req.	3
CE 240P-Soil Mech.& Found.	4	ME 238-Thermal Science	3
EE 220-Elec. Eng. Principles	3	Soc. Science (Gp.7)	6
	19		18
	SENIOR YEAR		
		Germ 252-5 Germ Lit.(Gp.4A)	3
Germ 293-Foreign Study	6	CE280W-Civil Eng. Projects	3
		CE 281-App. of Eng.Econ. in Des.	1
Work Study		Prof. Req.	6
		Non-West (Gp.5B)	3
	6		
			16

N.B. There are a total of 165 credits shown above, which represents one year of work beyond the BS in Engr. Students take the equivalent of two W Courses in Engineering. One W sourse must be made up with the University core cirriculum courses.

EUROTECH

Dual Degree Program in Engr and German (Work Period in Germany)
Engineering Major - Chemical Engineering

November 11, 1996

Fall Course	Cr.	Spring Course	Cr.
FRESHMAN YEAR			
Germ 131-Elem. Germ.I(Gp.1)	4	Germ 132-Elem. Germ. II(Gp.1)	4
Chem 127Q-General Chem(Gp.8)	4	Chem 128Q-General Chem(Gp.8)	4
Math 115Q-Calculus(Gp.3)	4	Math 116Q-Calculus II(Gp.3)	4
Engr 150C-Intro. to Eng.I	3	Engr. Elec.	3
Engl 105-English Comp.(Gp.2)	3	Engl 109-Lit. & Comp.(Gp.2)	3
	18		18
SOPHOMORE YEAR			
Germ 133-Inter. Germ I(Gp.1)	4	Germ 134-Inter.Germ.II(Gp.1)	4
Phys 151-Phys. for Engineers I	4	Phys 152-Phys. for Eng.II	4
Math 210-Multivar.Calc.(Gp.3)	4	Math 211-Elem. Diff. Eq.	3
CE 214-Applied Mechanics I	3	Cheg 203-Intro. to Chem. Eng.	3
Chem 243-Organic Chem.	3	Chem 244-Organic Chem.	3
Germ 220 App.Mech.Rec.inGerm.	1	Germ 221 Intro. to Sci in Germ.	1
	19		18
JUNIOR YEAR			
Germ 233-Adv. Lang. Skills	3	Germ 234-Adv. Lang. SkillsII	3
Hist 100-Roots of West.Exp. OR		Soc. Science (Gp.7)	3
Hist 101-Modern Europe(Gp.5)	3	Chem 240-Organic Chem. Lab	3
Cheg 211-Chem Eng.Thermody.	3	Cheg 212-Chem. Eng. Thermo	3
Cheg 223-Transfer Operations	3	Cheg 224-Transfer Operations	3
Chem 263-Phys. Chem.	4	Chem 264-Physical Chemistry	4
Chem 256-Phys. Chem. Lab	1		
Germ 222 Fields of Tech.	1		
	18		19
PRE-SENIOR YEAR			
Germ 251 Germ.Cult.&Civ.(Gp.5A)	3	Germ 281-Germ.Film&Cult(Gp.4B)	3
Social Science (Gp.7)	3	Phil 104-Phil.& Soc.Eth.(Gp.6)	3
Cheg 237-Chem.Eng. Lab	3	Social Science (Gp.7)	3
Cheg 241-Process & Design Econ.	4	Cheg 239W-Chem. Eng. Lab	3
Cheg 251-Process Kinetics	3	Cheg 242-Process Design	3
Cheg or Prof. Req.	3	Cheg 247-Intro. to Proc. Dyn.	3
	19		18
SENIOR YEAR			
		Germ 252-5 Germ. Lit.(Gp.4A)	3
Germ 293 Foreign Study	6	Non-West. (Gp.5B)	3
Work Period		Cheg or Prof.Req.	12
	6		18

N.B. Students take the equivalent of two W Courses in Engr. One W course must be made up with courses taken from the College of Liberal Arts and Science/

EUROTECH

Dual Degree Program in Engr and German (Work Period in Germany)
Engineering Major - Computer Science and Engineering

November 11, 1996

Fall Course	Cr.	Spring Course	Cr.
	FRESHMAN YEAR		
Germ 131-Elem. Germ.I(Gp.1)	4	Germ 132-Elem. Germ. II(Gp.1)	4
Chem 127Q-General Chem(Gp.8)	4	Chem 128Q-General Chem(Gp.8)	4
Math 115Q-Calculus(Gp.3)	4	Math 116Q-Calculus II(Gp.3)	4
CSE 110C Intro.toNum.Comp.	3	CSE 111C Intro.Nonnum.Comp.	3
Engl 105-English Comp.(Gp.2)	3	Engl 109-Lit. & Comp.(Gp.2)	3
	18		18
	SOPHOMORE YEAR		
Germ 133-Inter. Germ I(Gp.1)	4	Germ 134-Inter.Germ.II(Gp.1)	4
Phys 151-Phys. for Engineers I	4	Phys 152-Phys. for Eng.II	4
Math 210-Multivar.Calc.(Gp.3)	4	Math 211-Elem. Diff. Eq.	3
CSE 207-Computer Science	3	EE 201-Fund. of Circuit Anal.	3
CSE 208W-logic Design Lab	2	EE 209W-Analog Design Lab	2
Germ 220 App. Mech Rec.in Germ	1	Germ 221 Int.to the Sci.inGerm.	1
	18		17
	JUNIOR YEAR		
Germ 233-Advanced Lang. Skills	3	Germ 234-Adv. Lang. Skills II	3
EE 202-SIgnals and Systems	3	CSE 240-Inter.Comp.Sys. Lab	3
CSE 241-Comp. Organization	3	CSE 228 Parallel systems	3
CSE 230-Intro. to Software Eng.	3	Math 227 App. of Lin. Alg.	3
CSE 254-Intro. to Discrete Sys.	3	Math 231-Probability	3
Hist 100-Roots of West. Exp. OR		OR	
Hist 101-Modern Europe (Gp.5)	3	Stat 220-Statistical Methods	
Germ221 Fields of Tech.	1	Social Science(Gp.7)	3
	19		18
	PRE-SENIOR YEAR		
Germ 251 Germ.Cult.&Civ(Gp.5A)	3	Germ 281 Germ Film & Cult(Gp.4B)	3
Des. lab	3	Des. Lab	3
CE 214- App. Mech. I	3	CSE259 Algorithms and Complex	3
CSE 244-Prog.Lang.Transition	3	Social Science (Gp.7)	3
CSE221-Probalistic Perf. of Com	3	Phil104-Phil.&Soc.Ethic(Gp.6)	3
Social Science (Gp.7)	3	Prof Req.	3
	18		18
	SENIOR YEAR		
		Germ 252-5 Germ Lit.(Gp. 4A)	3
Germ 293 Foreign Study	6	Non-West (Gp.5B)	3
Work Period		Prof. Req.x3	9
		CSE 258-Operating Systems	3
	6		18

N.B. Students take the equivalent of two W Courses in Engeering. One W course must be made up with the courses taken in the College of Liberal Arts and Science. Prof. Req. and Des. Lab must be selected in accord with the approved area of concentration, see Guide to Course Selection for CSE Majors.

EUROTECH

November 11, 1996
Dual Degree Program in Engr and German (Work Period in Germany)
Engineering Major - Electrical and Systems Engineering

Fall Course	Cr.	Spring Course	Cr.
		FRESHMAN YEAR	
Germ 131-Elem.Germ. I (Gp.1)	4	Germ 132-Elem. Germ. II (Gp.1)	4
Chem 127Q-General Chem. (Gp.8)	4	Chem 128Q-General Chem. (Gp.8)	4
Math 115Q-Calculus I (Gp.3)	4	Math 116Q-Calculus II (Gp.3)	4
CS 110C-Intro. to Num. Comp.	3	Engr. Elec.	2or 3
Engl 105-English Comp.(Gp.2)	3	Engl 109-Lit. and Comp. (Gp.2)	3
	18		17
		SOPHOMORE YEAR	
Germ 133-Inter. Germ. I (Gp.1)	4	Germ 134-Inter. Germ. II (Gp.1)	4
Phys 151Q-Phys. for Engr.I	4	Phys 152Q-Phys for Engr. II	4
Math 210Q-Multivar. Calc.(Gp.3)	4	Math 211Q-Elem.Diff.Equations	3
CSE 207-Computer Science	3	EE 201-Fund. of Circuit Analysis	3
CSE 208-Logic Design Lab.	2	EE 209-Analog Design Lab	2
Germ 220 App.Mech.REC.in GER.	1	Phil 104- Phil. & Soc.Eth.(Gp.6)	3
	18		19
		JUNIOR YEAR	
Germ 233-Adv. Lang. Skills	3	Germ 234-Adv. Lang. Skills II	3
CE 214- Applied Mech.I	3	EE 207-Electromag. Waves&App.	3
EE 202-Signals & Systems	3	EE 232-Systems Analysis	3
EE 204-Elec. Devices & Circuits	3	EE 245-Micro/opto-Elec.Dev.	3
EE 206-Electromag.Fields &App.	3	Stat 224-Prob. Models for Engineers	3
EE 261-Elec.Engr.Lab.A	3	EE 262-Elec. Eng. Lab. B	3
		Germ 221 Int.to Sci. in Germ	1
	18		19
		PRE-SENIOR YEAR	
Germ 251-Germ.Cult.&Civ.(Gp.5A)	3	Germ 281 Germ.Film&Cult. (Gp.4B)	3
Hist.100 or Hist101	3	Social Science (Gp.7)	3
EE 230-Elec. Instru.	3	Design Lab	3
EE 241-Comm. Systems	3	Professional Requirement	6
EE 297-Elec. Eng. Undergrad. Sem.	1	EE 270-Elec. Eng. Design Project	3
Design Lab	3		18
Germ222 Fields of Tech.	1		
	17		
		SENIOR YEAR	
		Germ 252-5-Germ.Lit. (Gp.4A)	3
Germ 293 Foreign Study	6	Social Science (Gp.7)	6
Work Period		Professional Requirement	6
	6	Non-west. (Gp.5B)	3
			18

N.B. Students take the equivalent of two W Courses in Engr. One W course must be made up with the Courses taken from the College of Liberal Arts and Sciences.

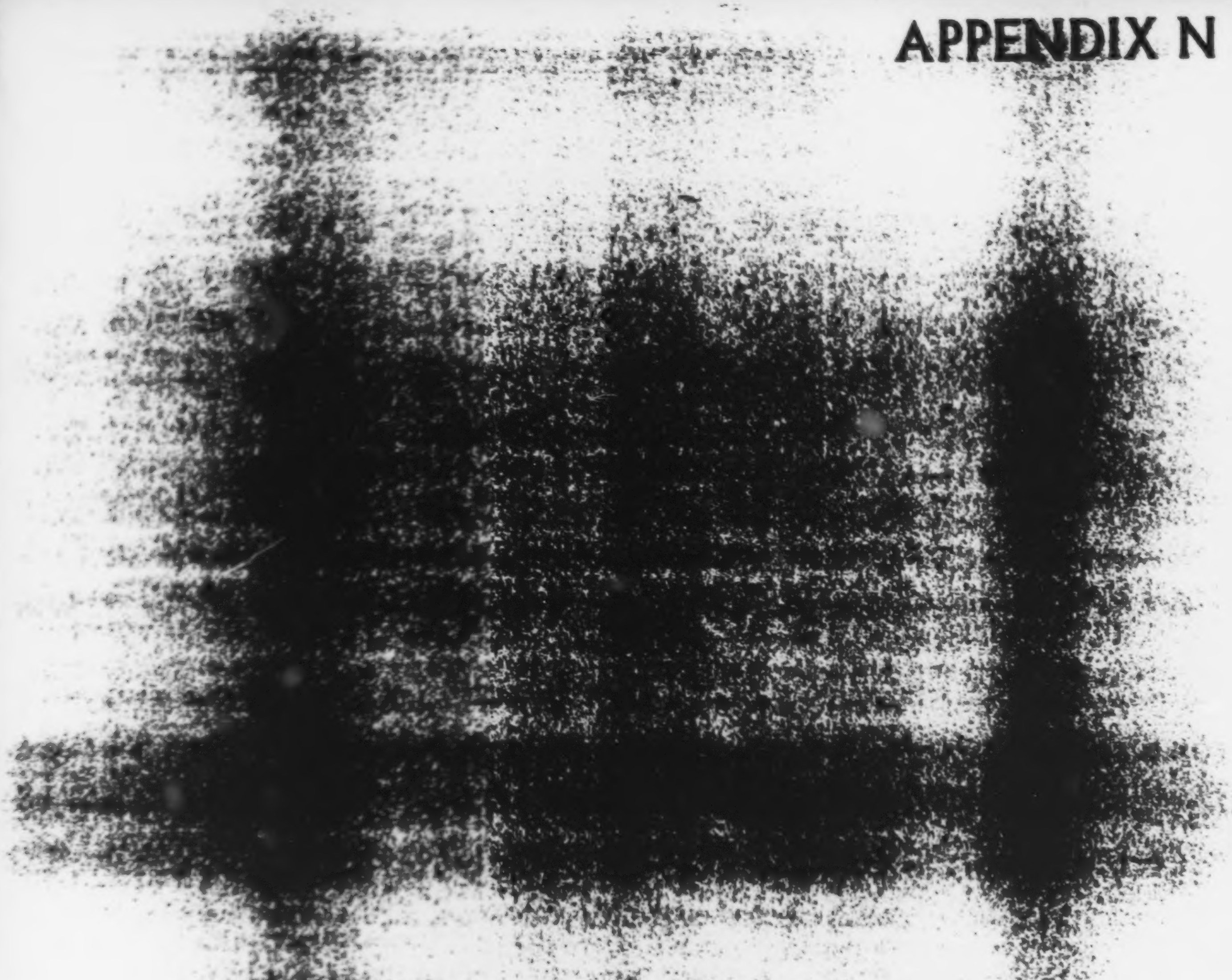
EUROTECH

Dual Degree Program in Engr and German (Work Period in Germany)
Engineering Major - Mechanical Engineering
November 11, 1996

Fall Course	Cr.	Spring Course	Cr.
	FRESHMAN YEAR		
Germ 131-Elem. Germ.I(Gp.1)	4	Germ 132-Elem. Germ. II(Gp.1)	4
Chem 127Q-General Chem(Gp.8)	4	Chem 128Q-General Chem(Gp.8)	4
Math 115Q-Calculus(Gp.3)	4	Math 116Q-Calculus II(Gp.3)	4
Engr 150C-Intro. to Eng.I	3	Engr. 151-Intro. to Eng II	3
Engl 105-English Comp.(Gp.2)	3	Engl 109-Lit. & Comp.(Gp.2)	3
	18		18
	SOPHOMORE YEAR		
Germ 133-Inter. Germ I(Gp.1)	4	Germ 134-Inter.Germ.II(Gp.1)	4
Phys 151-Phys. for Engineers I	4	Phys 152-Phys. for Eng.II	4
Math 210-Multivar.Calc.(Gp.3)	4	Math 211Q-Elem. Diff. Eq.	3
CE 214-Applied Mechanics I	3	CE 215-Applied Mech. II	3
Germ 220 App.Mech.Rec.inGer	1	Germ 221 Intro.toSci.in Germ	1
ME 205- Intro to Mech.Eng.	3	ME 233-Thermodynamic Princ.	3
	19		18
	JUNIOR YEAR		
Germ 233-Adv.Language Skills	3	Germ 234-Adv. Lang. Skills II	3
CE 287-Mechanics of Materials	3	Social Science (Gp.7)	3
EE 220-Elec.Eng. Principles	3	ME 220-Dynamics of Mech. Sys.	3
ME 234-Applied Thermodyn.	3	MTGY 201-Physical Mettallurgy	3
ME 262-Intro.Thermo.Fluids Lab	3	MTGY 202-Phys. Met. Lab	1
Germ 222 Fields of Tech	1	ME 250-Fluid Dynamics	3
ME 253 Linear systems Theory	3	Hist 100-Roots of West. Exp.	
		OR	
		Hist 101-Modern Europe(Gp.5)	3
	19		19
	PRE-SENIOR YEAR		
Germ 251 Germ Cult.&Civ.	3	Germ 281-Germ.Film&Cult.(Gp.4B)	3
ME 255 Computational Mech.	3	Phil 104-Phil.& Soc.Ethics(Gp.6)	3
ME 271P Exp. Mech. Eng.	2	Social Science (Gp. 7)	3
ME 227-Design of Mach. Elem.	3	ME 260W-Measurement Tech.	3
ME 242-Heat Transfer	3	ME 273P-Senior Design Proj.II	3
ME 272P Senior design Proj.I	3	ME Req	3
	17		18
	SENIOR YEAR		
		Germ 252-5 Germ Lit(Gp.4A)	3
Germ 293-Foreign Study	6	Non-West (Gp.5B)	3
Work Period		ME Requirement	3
		Professional Req.	6
		Social Science(Gp.7)	3
	6		18

N.B. Students take the equivalent of two W courses in Engineering. One W course must be made up with the courses taken in the College of Liberal Arts and Sciences.

APPENDIX N



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Jörg Roche / Thomas Salumets (Eds.)

Germanics under Construction

Intercultural and Interdisciplinary Prospects

(Studium Deutsch als Fremdsprache – Sprachdidaktik, hg. von Bernd-Dietrich Müller, Band 10)

München 1996 · ISBN 3-89129-110-8 · 266 S., kt. · DM 68,- · SFr 68,- · ÖS 530,-

The anthology explores the potential of a discipline that operates in a specific hermeneutic environment with dozens of related disciplines in North America and around the world, disciplines which are preoccupied with the study of a national culture in a »foreign« country. The issues raised are by no means unique to »Germanistik« in North America, as the title of the book and the academic background of most of its contributors may suggest. They are not only equally relevant to any other kind of »Auslandsgermanistik« and those who study and teach it, they relate to the study and teaching of any foreign language and literature because of the similar environments and working conditions. The contributions presented in this volume offer invaluable insights to anyone who is preparing or continuing to work in this academic field.

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Intercultural and Communicative Aspects in the Languages for Special Purposes Curriculum: German and Engineering at the University of Connecticut

Maria-Regina Kecht/Thomas Strack

Communicative competence and cultural awareness in language acquisition are essential goals of foreign language pedagogy, yet their particular role and function in the Languages for Special Purposes (LSP) curriculum have hitherto remained obscure. What seems to have developed instead is a focus on the functional aspects of communicative competence within a narrowly defined professional context. This narrowing of the cultural parameters of communicative competence is supported by a rather pragmatic stance of LSP practitioners. They tend to hold the view that programs combining a professional discipline with a foreign language should primarily seek to integrate students as fast and efficiently as possible into professional life, the workplace abroad, or an export-oriented job in the U.S.[1] Frequently, the foreign culture within which LSP is embedded remains a mere appendix to the instruction in such double-major programs, and the learner's understanding of cultural differences is neglected. Such practice is backed up by observations like those of Lothar Hoffmann who defined "special language as language used by specialists in a certain field of knowledge in order to communicate with their fellow specialists on the issues of their special field of knowledge".[2] That this is exactly the skill most students in LSP may want to acquire can be inferred from the answers a number of our students recently gave when asked whether they found the integration of technical materials into language instruction interesting and stimulating. One of them wrote: "Yes, the language of engineering is, I think, to a certain degree universal, as new technology often shares a similar name in many languages. This and the fact that I am often familiar with the concepts of the presented materials makes them interesting and easy to follow".[3] We want to question these L2 priorities particularly, since the focus on using a "special language" in a professional context is bound to cause difficulties in the process of acquiring communicative competence as well as cultural awareness. Shortcomings in these areas will, in turn, negatively reflect on the performance of a learner in LSP. Proficiency may well be acquired for particular (professional) functions by means of a pertinent selection of linguistic and cultural materials, but at the same time, students may not learn that language as a social practice is embedded in a complex cultural totality. A predominantly functional interest in language leads to a hasty comparison of cross-cultural aspects focusing merely on the most effective approaches to production and the best strategies in decision making. The specific features of the foreign culture become bothersome obstacles to the smooth flow of the universal discourse of the professionals.

We agree with Hans-Jürgen Krumm: "Interkulturelles Lernen entwickelt sich beim Sprachenlernen nicht automatisch mit, vielmehr bedarf es eines gezielten Wahrnehmungstrainings, um das Spezifische einer fremden Kultur sehen zu lernen".[4] Such '*Wahrnehmungstraining*' is, of course, a long-term developmental process. We therefore think it ought to be integrated into LSP instruction from the very beginning, particularly since the engineering students' predisposition to "defensive learning" and "instrumental motivation" call for carefully thought-out, special pedagogical approaches.[5] Helping students to acquire the skill to "learn how to learn culture"[6] should be one of the primary objectives in the LSP curriculum.

Culture learning plays, as foreign language experts have discovered, a key role in the development of communicative competence. Following current methodological trends in communicative language teaching, the ACTFL Proficiency Guidelines of 1986 set the parameters of communicative competence as they defined different levels of oral proficiency.[7] Guidelines for 'cultural proficiency', however, are a much more complex problem, yet they need to be addressed as we continue to focus on the parameters of culturally adequate communication.[8] The Professional Standards and Proficiency Commissions have determined the criteria for effective communication:

> [It] involves not only exchanging verbal messages but *creating rapport, eliciting respect and good will*. This requires accurate as well as fluent language. But language, in turn, requires three kinds of support: 1) a knowledge of the culture and society expected of the outsider by a native speaker ... 2) a knowledge of how to observe and analyze a culture (ethnographic methods) 3) the sociolinguistic ability to interact, to perceive nonverbal messages.[9]

"Accurate" and "fluent" language can, in fact, only be achieved through "cultural proficiency", which Claire Kramsch defines as "not only the ability to produce and understand the forms of the language but the capacity to reflect on how the choice of these forms in spoken and written discourse both defines and is determined by personal relationships, social situations, and cultural presuppositions"(14).

The problem with this definition is that cultural competence (which Kramsch also equates with "politeness -- a social and cultural construct that requires cognitive and affective maturity, and the concomitant ability to make behavioral choices"(15)) relies too much on the ability to generate the "right" interpretation of oral/written expressions in situations the students have been prepared for. Yet cultural proficiency is more than that; it goes beyond construction of verbal meaning and requires more than the recognition of cultural patterns. Cultural proficiency should prepare the L2 learner not only for "ideal types" of social situations but also for the unexpected and equip the learner with strategies to deal with it.

Vicki Galloway's ideas on cross-cultural discovery also include a warning against the shortcomings of a merely cognitive approach to cultural proficiency. She believes that the accumulation of "isolated sets of facts and discrete cultural events . . . cannot adequately prepare individuals for the unpredictability of real life encounters".[10] Furthermore, the development of cultural openness is an arduous and continuous learning process of increasing complexity leading the learner from tourist and textbook stereotypes to the "realization of the cultural coordinates of another, legitimate, reality".[11] It is thus very important that the L2 curriculum focus on what Andreas Pauldrach called the "Entwicklung von Wahrnehmungs- und Empathiefähigkeiten im Umgang mit fremden Kulturen und Gesellschaften".[12] And these skills can best be taught through experiential, learner-centered education that actively involves students in the foreign language/culture acquisition process and allows them to reflect upon the numerous instances of 'Fremdbegegnung' built into the curriculum. It is thus critical that the curriculum design foster the process of understanding the other culture and take into account not just verbal but also nonverbal communication.

A closer look at the concepts of communicative competence and cultural proficiency should help to explain what kind of didactic approach we have chosen in our dual-degree program, EUROTECH, to reach the pedagogical objectives sketched above.[13]

The explicit presentation of language functions and the linguistic structures associated with them are viewed as essential to any description of communicative competence. As Margie Berns expresses it in a survey of the achievements of functional approaches to language:

> For some, a function has been as general as 'describing a person or a place' or 'describing mechanical processes'; for others it has been as specific as 'requesting help with baggage' or 'answering questions about what people have been doing'.[14]

This approach focuses on universals, on situation types the features of which are established by a set of general categories going back to Bronislaw Malinowski's work and the reading of his works by J. R. Firth and later Michael Halliday. In Berns's description, communicative competence incorporates expression, interpretation, and negotiation, which unfold within each particular culture in a particular way.[15]

Developing communicative competence thus requires that linguistic rules not be severed from social contexts. Thus, varieties, dialects, and accents must be an integral part of language instruction as it focuses on interaction. Interaction is understood here as defined by a context "that gives meaning to form and function and makes it possible for us to make sense of any instance of language" (Berns 1984:19). Yet sometimes this approach may lead to some form of reductionism, especially when the curriculum ignores the fact that not all situations "are necessarily found across cultures, and therefore that the related linguistic forms may serve different functions in another culture" (9). This problem becomes even more apparent as one goes beyond Berns's deliberations and back to Malinowski. In his seminal essay "A Scientific Theory of Culture", Malinowksi focuses on "universal institutional types" that he analyzes according to the principle of social integration they serve. Such institutions are, for example, "specific units for the organized exercise of teaching (schools, colleges, universities); for research (laboratories, academies, institutes) . . . ".[16] Malinowski then proceeds to discuss the "constant interaction between the organism [=individual] and the secondary milieu in which he exists, that is, culture" (1944:68). In this functional/deterministic context, Malinowski discusses culture in terms of people's ability to achieve their goals by submitting to the values, ideas, beliefs, and principles as they are embodied in the institutions of a given society.

This kind of anthropological approach becomes problematic if it becomes the basis for curriculum design. It can be discerned in the presumably exemplary communicative FL syllabus introduced by Sauli Takala. His chart on language functions, language skills, and topics/notions presents a detailed list of what a student is supposed to produce in oral and written discourse, what communicative skills s/he is to practice, and what topics/notions s/he is to cover.[17] But one cannot help noticing the reductionism informing the list and, as a consequence, jeopardizing the goal of cultural authenticity in the L2 classroom. Building an instructional program on the foundation of such anthropological universals disregards the students' own particular cultural background and hardly foregrounds 'Eigenverständnis' and 'Fremdverständnis'.

To achieve 'Eigenverständnis' and 'Fremdverständnis', one has to integrate culture learning into foreign language acquisition from the very beginning, that is, one has to focus on input/intake and environment. In designing our program, we took a closer look at some of the available theoretical underpinnings for our integrative effort. In *Second Language Acquisition and Second Language Learning*, Stephen Krashen examines what factors help students learn a second language. In his Monitor Theory, a more recent version of his older Monitor Hypothesis, he specifies two factors as most conducive to L2 acquisition. The first is a "low affective filter" regarding input; students should feel comfortable and confident while communicating. The other one is sufficient "comprehensible input". In the larger context of the Natural Approach (Terrell), these two aspects should encourage acquisition along the lines of some universal natural order. Thus the learner should be able to (at first passively) absorb "comprehensible input", that is, meaningful i + 1 input slightly beyond a current level of proficiency but still comprehensible to the students. Later the student can use that language actively. A "monitor", a hard-to-describe intellectual property, checks utterances for grammatical accuracy. It is important to keep this monitor -- and thus, the less important "learning" of rules as opposed to a subconscious "acquiring" of the language -- out of the way of the natural language acquisition process, which makes language acquisition easier and more successful.

Recent research on input and environments has criticized Krashen's claims for their lack of testability. Regarding the monitor, it seems that a clear distinction between 'acquisition' and 'learning' is hard to make,[18] and it is difficult to explain how the monitor distinguishes between the two supposedly fundamentally different ways of responding to input. Modifying his model, Krashen has had to restrict the monitor so tightly that it is of limited usefulness.[19] Larsen-Freeman and Long focus their criticism on Krashen's concepts of "comprehensible input" and "low affective filter", finding both concepts to be based on a nativist view of a specific linguistic capacity unique to the human species, thus rooted in the innate abilities theory propounded by Chomsky as a language acquisition device (LAD), and a grammar universal to all languages.[20] Regarding Krashen's view of "comprehensible input", Larsen-Freeman and Long raise epistemological objections. They find this concept essentially untestable: "The Input Hypothesis contains at least two constructs, i and i+1, which pre-empt direct testing of that hypothesis" (1991:225). Krashen's definition of a "low affective filter" has also drawn criticism. Alice Ommagio Hadley agrees with McLaughlin that the "Affective Filter Hypothesis" is questionable since no one knows "how this filter develops", and it fails to allow "predicting the course of linguistic development" (1993:53). Such predictions, however, are necessary in order to analyze the development of specific learner varieties as learners gradually develop their abilities along the continuum from L1 to L2, that is, in the course of acquiring the second language.[21]

Especially with adults, this process is highly unpredictable, as is the development of L2 categories alien to the learner's L1.[22] Research in the area of L2 acquisition for adults has yielded data suggesting remarkable differences between children's L1 and adult L2 acquisition. With regard to psychological parameters, Klein points out:

> Wir können auf jeden Fall festhalten, daß der Erstsprachenerwerb mit der sozialen Entwicklung, damit der Ausbildung einer sozialen Identität verknüpft ist; für den Zweitspracherwerb gilt dies nicht in gleichem Maße (1984:18).

Both aspects may cause problems in L2 acquisition, as the "old identity" resists the new language. Yet Krashen's approach, in spite of its empirical and theoretical shortcomings, is still helpful in a critical approach to LSP instruction. Wolfgang Klein looks at the practical relevance of the distinction between learning and acquisition. He rejects Krashen's vague definition of the dichotomy as well as the concept of a "metalinguistischer Sprachgebrauch". Instead, he advises "darauf zu schauen, welche konkreten Mittel und Möglichkeiten der Lerner hat, seinen eigenen Sprachgebrauch und den anderer zu betrachten und zueinander in Bezug zu setzen" (152). Emphasizing "ungesteuerter Spracherwerb" (28) outside the classroom and the development of "Lernervarietäten" (29), he discusses how to improve these "Varietäten".[23] Yet Klein still believes that the natural approach "in seiner extremsten -- und vielleicht erfolgreichsten -- Form [ein] ungesteuerter Zweitsprachenerwerb ist, der so gesteuert ist, daß er einem besonders günstig ungesteuerten nahekommt". (33). We have found that a combination of both considerations would allow for a critical evaluation of the L2 acquisition process as it moves from one level of any given "Lernervarietät" to the next.[24]

Retracing Krashen's work to its original model of L2 performance, rather than focussing on his theory of L2 acquisition, we made careful use of some of his suggestions regarding environments. As Omaggio has pointed out as recently as 1993, Krashen's ideas have "touched a responsive cord" in practitioners who "recognize the need to provide learners with 'comprehensible input' and find Krashen's recommendation that affective considerations be primary in the classroom very appealing" (1993:54). By cautiously combining Krashen's ideas on aspects conducive to L2 acquisition with considerations on 'Lernervarietäten', we have tried to deal with the weaknesses of functionally oriented LSP instruction. Exposing our students to as many native speakers as possible, we have attempted to include both linguistic and cultural aspects of language acquisition (passive intake and active output). The exposure of our students to a wide variety of native speakers with a great many different professional backgrounds as well as a wide variety of peers from a number of academic disciplines guarantees 'comprehensible input' in many areas outside engineering. This variety in linguistic and cultural input is important to avoid the development of some engineering pidgin, a static engineering-specific L2 variety. Even if this LSP learner-variety does sound somewhat accurate for an L1 engineer, it might still have substantial shortcomings in terms of a general culture and linguistic proficiency. As Klein warns, "Interferenzen treten umso seltener auf, je spezifischer die beiden Sprachen [L1 and L2] auf bestimmte Kommunikationssituationen verteilt sind" (1984:26). Supplying a variety of input in an experientially oriented curriculum is intended to prevent any such interlanguage from fossilizing. We have to look at interlanguages "before they conform to target-language norms" in terms of their LSP area (Larsen-Freeman and Long 1991:45). To this end, we offer input beyond the typical LSP classroom environment or an imagined workplace; we have attempted to supply an experiential version of (language/culture) +1, where the '1' stands for our efforts to counteract the pragmatic attitude of our students that could lead to the engineering pidgin.

This is where Krashen comes back into the picture. As he points out, the learner "must not only understand the input but must also, in a sense, be 'open' to it" (1981:21). Krashen examines attitudinal factors that would contribute to a "low affective filter", that is, high receptivity of the language heard for acquisition;[25] these factors are "integrative motivation", "instrumental motivation", and "empathy". "Integrative motivation" Krashen defines "as the desire to be like valued members of the community that speak the second language" because such a learner "will not feel a threat from the 'other' group and will thus be more prone to engage in 'receptive learning' (acquisition),[26] rather than 'defensive learning'". "Instrumental motivation" Krashen defines as "the desire to achieve proficiency in a language for utilitarian, or practical reasons". Here Krashen predicts a stronger affective filter, and he warns:

> Instrumentally motivated performers may acquire just those aspects of the target language that are necessary . . . [A]t a more advanced level this predicts the non-acquisition of elements that are communicatively less important but that are socially important, such as aspects of morphology and accent (1981:23).

Even though it may only be implied here, Krashen opts for a cultural component in the early stages of L2 acquisition by stimulating the learner's empathy, namely "the ability to put oneself in another's shoes, . . . to identify more easily with speakers of a target language", and thus encouraging intake.

Communicative competence must thus be expanded to include cultural competence if we want to prepare our LSP students for more than survival at the foreign workplace; if, in fact, we want them to be adept at constructing other-culture meaning systems and developing an other-culture "archive" conducive to 'Fremdverständnis'.[27] Yet taking the learner to the level of empathetic interaction with the target culture requires more than "cultural proficiency" as defined by Kramsch. In our program, we want to help our students achieve "cultural proficiency plus" -- proficiency in terms of culturally adequate communicative competence (including an awareness of nonverbal cultural meaning systems) acquired through an experiential engagement in L2 interactions.[28]

Cross-cultural encounters have more than just a linguistic dimension, and experiential aspects of the curriculum emphasize the importance of this nonverbal dimension. The cultural anthropologist Edward T. Hall discusses the fact that "difficulties in intercultural communication are seldom seen for what they are",[29] since they are frequently reduced to problems of verbal exchange. In *The Silent Language*, he focuses on a nonlinguistic cultural unconscious where he locates a variety of "cultural message systems":

> While there can be no doubt that language molds thinking in a particularly subtle way, mankind must eventually come to grips with the reality of other cultural systems and the pervasive effect these other systems exert on how the world is perceived, how the self is experienced, and how life itself is organized (1990:xi).

Hall gives a great many examples of cultural clashes caused by differences in concepts of time and space, and he analyzes how "time talks" (140), and how "space talks" (162). Hall develops maps of culture to capture these differences in the context of specific "primary message systems" like "interaction, association, subsistence, etc." (196). For example, Hall elaborates on the function of waiting time in social interaction. An American envoy might be under the impression "that if you are five minutes late for a meeting and have kept ten people waiting, you have therefore wasted almost an hour of their time" (156). On the other hand, for him to wait in a front office for forty-five minutes in a Latin-American country is almost an insult according to the value he attributes to time. In different cultures "the content or 'agenda' of a given period of time is handled quite differently", (5) and in the case given, the waiting period has a social function highlighting the local hierarchical structures. In this culture, having the envoy wait for forty-five minutes was a sign of respect for him, since "instead of being at the tail end of the waiting scale, [he] was just barely at the beginning" (5). The participants in such a problematic exchange

> don't realize they are being subjected to another form of communication, one that works part of the time with language and part of the time independently of it. The fact that the message conveyed is couched in no formal vocabulary makes things doubly difficult, because neither party can get explicit about what is actually taking place (6).

And, interestingly enough, the anthropologist blames the Foreign Service language education for problems in cross-cultural communication:

> If [this member of the Foreign Service] had been taught the details of the local time system just as he should have been taught the local spoken language, it would have been possible for him to adjust himself accordingly (5).

Hall confirms the importance of the local *spoken* language, but he also highlights the importance of cultural awareness beyond the functional knowledge of the language. The problem remains, however, as Hall points out, that even if one prepared for different notions of time and space, one still would not know the importance and specific function of these aspects within an overall map of culture of a particular culture.

An additional problem arises from the fact that for the outsider, seemingly universal social functions might be achieved within different cultural meaning systems. The dangers inherent in the assumption of cross-cultural sameness have also been pointed out by Vicki Galloway, who, in her discussion of the difficulties of cultural descriptions, refers to the "absence of symmetry and counterpart", "the absence of shared conceptualization", "the absence of shared value", "the absence of shared form-function assignments", and "the presence of systemic change" -- all of which make the configuration of form/function networks outside our own culture a "very difficult undertaking" (1992:90).

Nevertheless, when designing the instructional program of EUROTECH, we made every effort to develop pedagogical approaches that would give engineering students of German opportunities first, to reflect upon their own cultural background and their own 'Vor-Urteile' as they become familiar with the German language/culture; second, to *experience* cross-cultural differences/conflicts and to learn how to resolve them without taking recourse to cultural stereotypes; and finally, to articulate and analyze their own experiences of 'Fremdbegegnung'. The process of acquiring the foreign language/culture should, in our opinion, also be a process of recognition, in which the constant testing of the learner's perceptions and preconceived notions perpetually generates new dispositions and expectations, thus inviting the learner to recognize the legitimacy of other-cultural meaning systems.

To reach our objectives, we have incorporated the lessons learned in experiential education (as compared to traditional education)[30] and have, as a consequence, stressed student involvement, student-centered teaching techniques, and utilization of local German resources. In this didactic framework, the teacher frequently becomes "a facilitator of specific experiences through which students grow in their awareness as products of cultural conditioning as well as in their awareness of cultural relativity".[31]

In the course of their five-year dual degree program, the EUROTECH students pass through three major phases that require increasing cross-cultural involvement and, at the same time, the development of culturally adequate communicative competence and an awareness of nonverbal cultural meaning systems. Elements of other-culture-immersion are inherent in all phases but staggered in degree of complexity and challenge. From phase 1, Perception, through phase 2, Exploration, to phase 3, Immersion, we systematically link up our students in a variety of interactions with local German speakers, emphasize cross-cultural teamwork, and provide pre-activity preparation as well as post-activity exercises that build reflection and analysis right into the language and culture acquisition process. We hope to achieve a growing empathy -- in the sense Krashen uses it -- as the students become more and more involved with the multitude of other-culture perspectives they encounter in each phase.

In the following, we would like to present an overview of those curricular aspects of EUROTECH that go beyond our bringing cultural authenticity into the classroom via multimedia (combinations of traditional media -- newspapers, magazines, films, television clips, videos, audiotapes, and CDs -- with more interactive kinds, such as computer software, e-mail, etc.).

Phase I: Perception

- Engineering students tend to have very practical reasons for studying German, which certainly increases the students' receptivity. But that is not enough. In order to engage consistently in what Krashen calls "receptive learning" and to "interact with speakers of the second language out of sheer interest, and thereby obtain intake" (1981:22), integrative motivation is needed. Even on the elementary level, we therefore regularly include *guest presentations of German-speaking engineering professors* in the EUROTECH classes. Students see and hear engineers use the foreign language (with mistakes, American accent, etc.) and learn about the fundamentals of an engineering topic in German. Apart from the fact that the students get an idea of the importance of German to the professors' careers, they see them as learners who are encouraged and supported by their foreign language colleagues during the class presentations. The guest presentations illustrate to the EUROTECH students how shortcomings in 'Sprachkenntnis' may impede the display of 'Fachkenntnis', but at the same time they highlight the productivity of cross-disciplinary cooperation and they show foreign language learning as a social experience. This experience with role models creates undergraduates' empathy. Furthermore, it prepares them for talks by German engineers who contribute to EUROTECH classes in the second and third years of the program.

- Built into the language/culture learning process are also *interviews and collaborative projects with German teaching assistants* in engineering. EUROTECH participants have the opportunity to get to know peers whose FL proficiency allows them to study and live abroad (role model/empathy). Through a variety of assignments linked to the topics covered in the German textbook (family, travel, hobbies, etc.), they are to elicit all kinds of information about the German students' attitudes, values, beliefs, and background. (Some of these interviews are carried out via e-mail, in preparation for international e-mail exchanges with engineering students at a 'Fachhochschule' in Germany.) Each interview, consisting of about five questions, is preceded by the student's written description (in English) of the answers s/he expects based on his/her cultural knowledge (based on the cultural information from personal experience, films, newspapers, textbook, etc.).[22] These preliminary answers are then compared to the information actually gathered during the interview, conducted in German. In a general discussion following the assignment (in English again), the class analyzes the difference between their initial hypotheses and their findings so as to promote culture learning. In this first phase, student team projects with their German peers may, for example, involve the assembly of a machine tool, the German instructions to which are scrambled. The students collaborate with German teaching assistants in attaching the right technical term to each part as well as getting the steps of assembly in the right order. Experiential learning of this sort permits a constant application of 'Fachkenntnis' and 'Sprachkenntnis', or rather a negotiation between the two, which is not only challenging but also fun.

- *German engineers regularly contribute through lectures and discussions* to three new, one-credit hour courses of EUROTECH taught at the sophomore and junior levels (*German Recitation in Applied Mechanics, Introduction to the Sciences, Fields of Technology*). A German instructor and German teaching assistants prepare the students for these visits. The pattern is usually as follows:

1. The guest speakers provide the students with a précis of the talk (15-20 minutes long) to familiarize them with the topic (its technical and cultural content)[23] and its formal/organizational/stylistic features.

2. A detailed glossary (based on the speakers' lecture notes) is prepared by the German teaching assistants, who come to class and explain the terms/issues in their own words. They also cover some of the technical content so that the students are

prepared to pay attention to the C2 representative ("silent language") and his/her particular approach to the given topic.

3. The guest presentations and the question-answer period allow the EUROTECH students to hear and observe a professional point of view from a representative of another culture. The students are encouraged to raise content-related questions about the technical as well as the cultural aspects of the talk (e.g., "What is the relevance of the chosen topic to Germans? Americans? export?") but they are also asked to pay attention to other matters, like the speaker's degree of audience contact or his/her strategies of stimulating discussion and handling questions (e.g., "How did the speaker respond to the undergraduates/Americans and to the graduates/Germans?") Immediately following the guest's visit, students fill out a questionnaire (in English), commenting on the quality of the presentation and what they have learned, describing the technical and the cultural information they have received, and giving their impression of the speaker.

4. Follow-up activities include students' written responses to questions raised by the German engineer (requiring self-reflection as well as comprehension of the subject matter); small projects to be carried out in teamwork with the German teaching assistants (e.g., research on the history of the guest speaker's company); and a group analysis of the videotaped presentation and question-and-answer period. The latter is conducted like a roundtable discussion (in English) in which the students' initial observations and evaluation (as recorded on the questionnaire) are used as a point of departure for the analysis of the videotape (language usage, body language/gestures and facial expressions, mode of interaction with audience). Each of these three one-credit courses has six outside speakers scheduled. The participating students may at the end compare the information gathered on their questionnaires: "Does the cultural content contain conflictual information?" "What differences in (economic, political, historical, personal) perspectives and style were there among the German engineers?" "What did they have in common?"

EUROTECH freshmen are also invited to these video screenings and roundtable discussions so that they could glean some cross-cultural information and observe culturally different behaviors.

Phase II: Exploration

- *Guided field trips to German companies in Connecticut* build on the cultural information students have accumulated and the sensitivity they have developed through their interaction with representatives of the target culture. At the same time, such trips contribute to personal cultural awareness. Careful planning and student preparation as well as effective follow-up activities are necessary to counteract the widespread notion that such reality-based cultural experiences are "days off". The German teaching assistants provide the students with some factual information about the company they are about to visit; and the students are asked to articulate in writing (in English) their expectations. Among other things, they respond to questions like "Have you been to a factory/manufacturing company before?" "What 'German features' do you expect to see?" "What educational background do you expect the president of the company to have?" (Both, the questions and the answers will change with experience.) During the visit (2-3 hours), students encounter all kinds of "German components": they meet German-speaking engineers; see German machine tools, blue prints, correspondence, signs ('Aufschriften'), and bilingual manuals; learn about the company's history through photographs showing parts of Germany; find out about German language classes for the company's employees; and hear the president discuss his need for German-speaking American engineers. The students' "field notes" reflect their particular observations as well as how they value the information they record; their notes become important material for class discussion after the field trip. They compare the actual experience with the earlier "hypothesis sheet".

- *Site visits and encounters with engineers at their job* are the next step in our students' exploration of German culture. In small teams (2 or 3), the EUROTECH participants return to some of the companies they have visited in order to carry out some specific projects (mostly in German), to do some 'Recherchen', e.g., conduct interviews with German engineers (or US engineers who were sent to Germany without knowing much or any German) on particular issues that highlight cultural differences. Useful examples are: models of training programs; the German apprenticeship system and its transferability to the US; work ethos in Germany and in the US; wages over here and there; workers' mobility; the role of labor unions, etc. When the students sit down to summarize (in writing) what they have recorded on their tapes, they are encouraged to turn to the German teaching assistants for explanations and clarifications. In their reports back to the class, the students go beyond descriptions of their findings; they also comment on what they found surprising, strange, enticing, or fantastic, and they are asked to give reasons for their reactions. The discussion with their classmates and the German teaching assistants becomes a rich source of cultural information and a mirror of cross-cultural attitudes. The reality-based experience acquired through several project activities of this sort gives students a sense of control over their learning process.

• *Summer internships with German companies in Connecticut* are part of the exploration phase, before students embark on the required internship in Germany. Since the university does not give academic credit for summer jobs (even if they are career-related), we cannot attach a series of assignments to this particular learning experience. We suggest to students, however, that they keep a journal (in German and/or English) and jot down their impressions, observations, their change of attitudes (towards the work assignment, the co-workers, the schedule, etc.), their use of German at the workplace, etc. The student's experience contributes to our roundtable discussions open to all EUROTECH participants.

Phase III: Immersion

• *A six-month internship in Germany* is the centerpiece of the EUROTECH program (spring of pre-senior year or fall of senior year), and appropriate professional, linguistic, and cultural preparation is vital to its success. Before students leave for their internship, German faculty and German engineers (from local industry) will conduct a three-day orientation workshop. German exchange students who have had a 'Praktikum' in industry will serve as additional resources. The workshop serves a number of purposes:

1. It will equip the students with very concrete information concerning their stay in Germany (e.g., transportation to the company, housing arrangements, initial appointments with training personnel, professional obligations).

2. It will provide opportunities for cross-cultural student involvement and situational interaction, easing the anxiety of the interns-to-be. Through company videos, various components of a workday at a German facility we provide the basis for role-play, ensuing discussion and analysis (e.g., teamwork at the assembly line; staff meeting; requiring help in coping with a problem at work). The collective input of EURTOECH students, German exchange students, and German engineers -- drawing from their own experiences and their own levels of 'Fremdverständnis' -- will, we believe, contribute to the growth of their other-culture "archive".

3. It will give the EUROTECH students a chance to articulate their fears and worries about their stay abroad. Self-reflection of this kind and others' thoughtful consideration of the problems at hand may help the student recognize that fear of the unknown is perfectly normal and that s/he is well equipped with strategies to succeed in the other culture.

Several measures will ensure that the internship is appropriate for pre-seniors or seniors in an engineering program." Since the students will get six credits in German for their internship but none towards their B.S. in engineering, each student will do a variety of assignments to demonstrate his/her development of "cultural proficiency plus": First, s/he will be required to keep a daily journal (in German) of the activities on and off the job as they apply to the learning process both in the technical area and in the improvement of language/culture skills. A substantial part of these entries has to be devoted to description and analysis of the student's own experience (expectations, attitude, behavior, reactions). Second, the students will explore the answers to particular investigative questions suggested to them by their German instructors (e.g., "What is the relationship between management and unions in Germany?" "How does the apprenticeship system work, and what do participants think of it?" "How much leisure time do Germans have, and what do they do with it?") Answering such questions successfully requires intensive interaction with many Germans in different positions and with different perspectives. Concomitantly, the student's understanding of German reality can be expected to become increasingly nuanced. Third, through careful attention to the news on radio and television, as well as conversations with Germans, the EUROTECH participants will put together their mosaic of the Germans' image of America and Americans. Obviously, they will also draw on their observations of the American presence in the media, popular culture, lifestyle, etc. Carrying out the work for this written report should, we hope, help the students increase their cultural "Wahrnehmungs- und Empathiefähigkeiten" (Pauldrach).

Upon their return from Germany, the EUROTECH students will not only complete an extensive questionnaire about their internship experience and talk about their stay with the directors of the program, but they will also share what they have learned in one of the program's round-table discussions. These sessions will, of course, be open to learners in phases I and II so that they can benefit from their peers' experience and integrate this knowledge into their own learning process, which, in turn, will make the cross-cultural experiential dimensions of the instruction more sophisticated.

• The student's internship experience will be useful in carrying out the required *senior project* in engineering, emphasizing teamwork and practical application. For EUROTECH participants, the senior project has some components connected with German engineering: their project may address an engineering problem that one of the German companies in Connecticut would like to solve; for advice they might turn to a German engineer as a senior colleague; and they will present their project in German.

The design of the EUROTECH program at the University of Connecticut emphasizes experiential, reality-based learning to maximize students' communicative competence and cultural awareness. All components of the (LSP) German instruction seek to overcome the engineering students' "defensive learning" disposition and increase their receptivity to the foreign language and culture. We concur with Lotito's and Pérez-Erdélyi's observation:

> Once students understand the process of cultural awareness and how the cultural experiences in which they participate actually make learning exciting, they often become enthusiastic allies (1988:149).

The companies that have been supporting EUROTECH are eager to hire graduates from the program. They have made it clear to us that they want well-trained engineers in all areas with "cultural proficiency plus"; engineers who can serve as effective liaisons between the team at their US branch and the German headquarters, affiliate, or partner.

Notes and References

[1] John Grandin at the University of Rhode Island, where a double major program in German and Engineering has been in place for several years now, describes the goals of their *International Engineering Program* (IEP): "Ideally, we would like to bring the students to a point of confidence with the professional concepts and literature with which they will be confronted during their internships. At the same time, we wish to create a level of competence in basic spoken German associated with daily life and culture in the Federal Republic". In "Report to the editor on second and third years of the IEP at the University of Rhode Island in the *Leseforum*". *Die Unterrichtspraxis* 23.2 (1990), 105. For further information on related issues, see Grandin, "German and Engineering: An Overdue Alliance". *Die Unterrichtspraxis* 22.2 (1989):146-52.

[2] Marina Dodigovic. "Interdisciplinary: Computer Assisted Linguistic Research and the Development of LSP Courseware". *Calico* 10.4 (1993):9.

[3] From an evaluation questionnaire on EUROTECH, a dual-degree program (German and Engineering) at the University of Connecticut, spring 1994.

[4] Hans-Jürgen Krumm. "Bilder im Kopf - Interkulturelles Lernen und Landeskunde". *Fremdsprache Deutsch* 6 (1992):16.

[5] Stephen Krashen comments on instrumental motivation: "Its presence will encourage performers to interact with L2 speakers in order to achieve certain ends. . .With instrumental motivation, language acquisition may cease as soon as enough is acquired to get the job done". *Second Language Acquisition and Second Language Learning*. Oxford: Pergamon Press, 1981. 22.

[6] Louise Damen. *Culture Learning: The Fifth Dimension in the Language Classroom*. Reading, Mass.: Addison-Wesley, 1987xix.

[7] "ACTFL Proficiency Guidelines", available through the American Council on the Teaching of Foreign Languages, Inc., 6 Executive Plaza, Yonkers, NY 10701-6801.

[8] It should be mentioned here that the report of the Committee on Cultural Competence (AATF National Commission of Professional Standards) is being revised and will hopefully soon be released for application. Under the guidance of Howard Nostrand, the committee has been trying to define a common core of cultural competence.

[9] Quoted in Claire Kramsch. "Proficiency Plus: The Next Step". *Penn Language News* 7 (Spring 1993):3.

[10] Vicki Galloway. "Toward a Cultural Reading of Authentic Texts". *Languages for a Multicultural World in Transition*. Ed. Heidi Byrnes. Lincolnwood, Ill.: National Textbook Company, 1992. 95.

[11] Galloway 96. In her analysis of different levels of cultural awareness, Galloway draws from R. Hanvey. "Cross-Cultural Awareness". *Toward Internationalism: Readings in Cross-Cultural Communication*. Ed. E.C. Smith and L.F. Luce. Rowley, Mass.: Newbury House, 1979.

[12] Andreas Pauldrach. "Eine unendliche Geschichte. Anmerkungen zur Situation der Landeskunde in den 90er Jahren". *Fremdsprache Deutsch* 6 (1992):8. Pauldrach's argument is also supported by the "25 Thesen zur Sprach-und Kulturvermittlung im Ausland" published by the Beirat Deutsch als Fremdsprache des Goethe-Instituts, esp. theses 18 and 23.

[13] EUROTECH started in the fall of 1993 with the generous support of the Fund for the Improvement of Post-Secondary Education (U.S. Dept. of Education). In order to design the instruction in a way that would best prepare the students for their future careers, we founded an Advisory Board representing industry, government, university administrators, and faculty. The board has been supportive and effective. There are about 90 German companies in Connecticut, which has allowed us to draw from their resources and provide the kind of experiential foreign language training we consider critical for the success of EUROTECH.

[14] Margie Berns. "Functional Approaches to Language and Language Teaching: Another Look". *Initiatives in Communicative Language Teaching*. Ed. Sandra J. Savignon and Margie Berns. Reading, Mass.: Addison-Wesley, 1984. 4.

[15] Cf. Sandra Savignon. *Communicative Competence: Theory and Classroom Practice*. Reading, Mass.: Addison-Wesley, 1983.

[16] Bronislaw Malinowski. "A Scientific Theory of Culture". *Theory of Culture and Other Essays*, Chapel Hill: U of North Carolina P, 1944. 64.

[17] See Sauli Takala. "Contextual Considerations in Communicative Language Teaching". *Initiatives in Communicative Language Teaching*. Ed. Sandra J. Savignon and Margie S. Berns. Reading, Mass.: Addison-Wesley, 1984. 23-34. Among the items listed in the category ""Language Functions", we find cluster areas like "social interaction" or "expressing opinions, attitudes, feelings", etc. Among the latter, Takala enumerates "like/dislike, agreement/disagreement, pleasure/displeasure, approval/disapproval" etc. The category "Topics and Notions", subsumes "people and their immediate environment", "activities", "nature, countries, peoples", "quantity and quality", "time", "place and manner", and "relations" (30-32).

[18] Wolfgang Klein. *Zweitsprucherwerb. Eine Einführung*. Königstein/Ts.: Athenäum, 1984. 32.

[19] Alice Omaggio Hadley. *Teaching Language in Context.* Boston: Heinle & Heinle, 1993. 53.

[20] Diane Larsen-Freeman and Michael H. Long. *An Introduction to Second Language Acquisition Research.* London and New York: Longman, 1991. 244. Wolfgang Klein sees Krashen's distinction between learning and acquisition as corresponding to "bewußt" and "unbewußt" (1984:151), and thus traceable to a psychological dichotomy that is especially difficult to deal with in SLA research.

[21] Cf. Larsen-Freeman and Long 1991:92. For a detailed critique of the "affective filter" and its development, cf. 247-49.

[22] Here is a good example: "Wer Deutsch als Erstsprache lernt, hat gewöhnlich eine Kategorie wie 'Aspekt' nicht in derselben Weise entwickelt, wie jemand mit Russisch als Erstsprache; wenn er deshalb etwas auf Russisch lernt, muß er dieses Konzept erst passend ausbilden. Insgesamt wird aber beim Zweitsprachenerwerb die notwendige kognitive Voraussetzung in ungleich höherem Maße gegeben als beim Erstsprachenerwerb". (Klein 1984:17).

[23] For a fine illustration of these efforts, cf. Klein on the "Vergleichsproblem", 1984:149f.

[24] For a detailed introduction to research in this field, cf. Larsen-Freeman and Long 1991:81-113.

[25] Krashen notes: "Performers with high or strong filters will acquire less of the language directed at them, as less input is 'allowed in' to the language-acquisition device" (22).

[26] This consideration has influenced our decision to integrate German-speaking professors of engineering into the German curriculum of EUROTECH from the very beginning. We believe that the regular participation of our colleagues in engineering will serve the function of role models demonstrating to our students that foreign language skills have been of great significance in these engineers' careers. See detailed comments below.

[27] Paul Mog defines "Archiv" as "die Gesamtheit der potentiell abrufbaren Erfahrungssedimente, Mythen, Bild- und auch Wissensbestände", which each individual continuously acquires, modifies, and discards. See Hans-Joachim Althaus and Paul Mog. "Deutsch-Amerikanische Beziehungen und Wahrnehmungsmuster". *Die Deutschen in ihrer Welt. Tubinger Modell einer integrativen Landeskunde.* Berlin, München: Langenscheidt, 1992. 17-42.

[28] According to R.J. Birdwhistell, 60% of communication is nonverbal. *Kinesics and Context: Essays on Body-Motion Communication.* Philadelphia: U of Pennsylvania P, 1970. 213.

[29] Hall, Edward T. *The Silent Language*, 11th ed. New York, London, Toronto, Sydney, Auckland: Doubleday, 1990. xiii.

[30] In *Cross-Cultural Orientation: A Guide for Leaders and Educators.* Brattleboro, VT: The Experiment in International Living, 1984, Alvino Fantini describes the differences between experiential and traditional education. The former emphasizes students' independent learning, their shared responsibility for learning and decision-making, the validity of students' own experience and knowledge, and the application of practical, immediate approaches.

[31] Barbara Lotito and Mireya Pérez-Erdélyi. "Learning Culture through Local Resources: A Hispanic Model". *Toward a New Integration of Language and Culture*, Ed. Alan Singerman, Brattleboro, VT: Northeast Conference Report, 1988. 147.

[32] On the topic of travel, the students can, for instance, raise the following questions: "What countries have you visited?" "For how long?" "When did you start travelling?" "Where did you stay?" "What did you like best?" Since the travel habits of young Americans differ markedly from those of their peers in Germany, an interview on the issue will elicit lots of valuable information contributing to increased cross-cultural awareness. In the class discussion, it is vital to examine the social, psychological, historical, economic, and geographic reasons for the differences.

[33] The German engineers' presentations focus on technical or scientific topics but also contain cultural components, e.g. an issue that has been of particular relevance for German industry; an issue that has affected German competitiveness in machine-tool manufacturing; an issue of concern to German affiliates in the U.S.

[34] The EUROTECH directors and training supervisors at the German plants will agree on the work assignments. The student will discuss the work assignment with the supervisor during the first day at the company and fax a description of these duties to the directors of EUROTECH. About one month after the internship begins, the directors will phone each student to ensure that the assignment is being carried out.

Der Doppelstudiengang "German and Engineering" an der University of Connecticut: Beurteilungsinstrumente und "Kontinuierlicher Verbesserungsprozeß"

Maria-Regina Kecht und Thomas Strack

In Deutschland wird vielfach die Klage geäußert, daß sich die Schulbildung von der Sekundar- bis zur Universitätsstufe nicht ausreichend auf die Bedürfnisse von Industrie und Wirtschaft einstelle. Darüber kann man in den USA nur den Kopf schütteln, denn die in Deutschland gängige Zusammenarbeit zwischen Staat, Industrie und Bildungseinrichtungen besitzt hier in Regierungs- und Industriellenkreisen geradezu Modellcharakter.[1] Vorbildlich scheint den Amerikanern die Verbindung zwischen Theorie und Praxis, zwischen akademischer und handwerklicher Ausbildung vor allem deshalb, weil in den USA die Infrastruktur für eine ähnliche Zusammenarbeit zum Leidwesen aller fast völlig fehlt.[2]

Will man also das Erfolgsrezept "Made in Germany" selbst in kleinem Rahmen adaptieren, bedarf es einer gewissen Experimentierfreudigkeit und großer Flexibilität sowohl in der Unterrichtsgestaltung als auch in der Organisation des gesamten Studiengangs. Es gilt, traditionelle Definitionen von Bildung aufzubrechen und damit den Lehrenden und Studierenden neue Aufgaben zu stellen und Zukunftsperspektiven zu eröffnen. Wichtig ist es, sowohl die Wirtschaft von der Notwendigkeit ihrer Mitarbeit beim Aufbau einer modernen, international orientierten Ausbildung zu überzeugen als auch staatliche Einrichtungen für ein solches Bildungsprojekt zu gewinnen.

Als vor knapp drei Jahren an der University of Connecticut das EUROTECH Programm, ein fünfjähriges Doppelstudium in den Fächern Deutsch und Ingenieurswesen, zum ersten Mal angeboten wurde, war die Vielschichtigkeit dieser Aufgabe weder den Organisatoren noch den Mitarbeitern klar. Es stand bereits fest, daß EUROTECH auf spezifische Strukturen und Ressourcen der Universität und ihres wirtschaftlichen Umfelds aufbauen konnte: Es gab etliche Professoren in den Ingenieurswissenschaften, die über gute Deutschkenntnisse verfügten; es gab genügend Germanisten, die sich ernsthaft über den Rückgang der Studentenzahl im Fach Deutsch sorgten und etwas dagegen tun wollten; es fanden sich neben etlichen großen global orientierten US-Firmen fast einhundert deutsche Unternehmen im Bundesstaat Connecticut, die aktiv nach

IngenieurInnen mit deutschen Sprach- und Kulturkenntnissen suchten. Zudem bestand die Möglichkeit, aus Washington Förderungsgelder für die Internationalisierung von Studiengängen zu bekommen.

Die Einzelheiten dieses experimentellen Modells mußten jedoch so ausgearbeitet werden, daß der Dialog zwischen Universität, Industrie, Lehrenden und Studierenden kontinuierliche Qualitätsbeurteilungen und damit Anpassung des Programms an die Bedürfnisse von Studierenden und Industrie erlauben würde. Bei einem zehntägigen Besuch deutscher Firmen wurden wir auf deren pragmatischen Einsatz des "KVP", des kontinuierlichen Verbesserungsprozesses, aufmerksam, der alle Beteiligten am Produktions- und Verwaltungsablauf einer Firma über direkte Rückkopplung miteinander verbindet, um zu einem effektiveren Betriebsablauf zu gelangen. Einen KVP hatten wir zwar auch bei uns eingebaut, diesen jedoch nicht so explizit institutionalisiert, wie es bei diesen Firmen der Fall war. Mit solchen Anregungen im Gepäck sind wir noch einmal unser Programm durchgegangen, haben unsere Zielsetzungen genauer definiert und jene Stellen näher bestimmt, an denen unser eigener KVP ansetzte und ihn noch stärker als bisher zum integralen Bestandteil unseres Programms gemacht.

Mehr als im amerikanischen Universitätsbetrieb ohnehin üblich ist, legten wir bei EUROTECH großen Wert auf einen verantwortlichen "Kundendienst" und nachweisbare Lernerfolge. Denn der Erfolgsnachweis des Experiments würde ja nicht nur für den Stiftungsfonds (Department of Education, Fund for the Improvement of Post-Secondary Education) von größter Bedeutung sein, sondern auch neue StudentInnen heranziehen, die Berufschancen der AbsolventInnen erhöhen und damit letztlich der Industrie und dem Erfolg des Programms dienen. Wesentlich war es also, Programmstruktur, Lehrziele und Beurteilungsinstrumente so einzurichten, daß jederzeit strukturelle Fehlentwicklungen bei fachlichen, fremdsprachlichen und interkulturellen Kompetenzen festgestellt und korrigiert werden konnten.

Im folgenden möchten wir das Profil der EUROTECH StudentInnen vorstellen und dann ausführlicher die Lehrziele, die von Universität und Industrie gesetzt sind, sowie die Beurteilungen und Qualitätsbemessungen unterschiedlicher Aspekte des Programms schildern. Diese regelmäßige Rückkoppelung zwischen Lernresultat und Lernprozeß in unserem Programm könnte auch für andere Institutionen von Nutzen sein.

Bei der Gestaltung des EUROTECH Programms mußten wir den spezifischen akademischen und gesellschaftlich-kulturellen Hintergrund amerikanischer "undergraduates" berücksichtigen. Zu diesen Gegebenheiten gehören eine vielfach isolationistische Weltsicht und eine entsprechende Geringschätzung von Fremdsprachkenntnissen;[3] eine in der "high school" vermittelte oberflächliche Allgemeinbildung und die daraus resultierende Notwendigkeit, am College eine Art von Studium generale über zwei Jahre nachzuholen; ein Curriculum im Ingenieurswesen, das sich im allgemeinen durch seine Industrieferne und Betonung theoretischen Wissens auszeichnet und daher für Praktika wenig Verständnis zeigt.

StudentInnen in EUROTECH schließen ihr Studium nach neun Semestern, zwei achtwöchigen Sommerpraktika in den USA und einem sechsmonatigen Praktikum in Deutschland mit zwei akademischen Graden ab. Sie erhalten den akademischen Grad von "Bachelor of Arts" in Deutsch und von "Bachelor of Science" in einem Spezialbereich des Ingenieurwesens, was ungefähr einem deutschen Vordiplom entspricht. Zur Aufnahme ins EUROTECH Programm werden keine Vorkenntnisse der deutschen Sprache erwartet, denn die wenigsten "high school" AbsolventInnen können Deutsch.

Um das Programm möglichst industriegerecht und praxisnah aufzubauen, wurde ein Industriebeirat gegründet, in dem etwa zwanzig Präsidenten amerikanischer und deutscher Firmen (z.B. Pratt & Whitney, Otis Elevators, Trumpf, Bayer, Index) ihre Interessen vertreten und EUROTECH auf vielfältige Weise beraten und fördern. So stellen die Beiratsfirmen unter anderem deutschsprachige Ingenieure für Unterrichtsvorträge zur Verfügung, liefern diverse Lehrmaterialien und Anschauungsobjekte, bieten Sommerpraktika an und laden EUROTECH Teilnehmer zu Industrie-Exkursionen ein. Auch für eine Teilfinanzierung des Lehrprogramms zeichnen die Beiratsmitglieder verantwortlich.

Gerade weil die Industrie von Connecticut sich für das Bildungsexperiment EUROTECH eingesetzt hat, bemühen sich die Administratoren und Lehrer, einen Unterricht anzubieten, der weit über das traditionelle Lehrangebot in Deutsch und Ingenieurwesen hinausgeht. Wir bieten einen Unterricht an, der die technische und gesellschaftliche Realität der internationalen Arbeitswelt einbindet. Wie wir in vielen Gesprächen mit den Mitgliedern unseres Beirats erfahren haben, erwartet die Industrie fachlich qualifizierte Ingenieure mit Eigeninitiative, Teamfähigkeit, Kommunikationsfähigkeit und Adaptionsvermögen. Die inhaltliche Ausgestaltung des Unterrichts berücksichtigt das technische Interesse und die pragmatische Studienmotivation der IngenieursstudentInnen, zielt aber auch darauf ab, durch das Erlernen der fremden Sprache, "die Entwicklung von Wahrnehmungs- und Empathiefähigkeiten sowie die Entwicklung von Fähigkeiten, Strategien und Fertigkeiten im Umgang mit fremden Kulturen und Gesellschaften" zu fördern.[4] Diesem Ziel dient auch eine eigens entworfene Kursfolge, die fundamentale Begriffe und Aspekte des Ingenieurwesens auf Deutsch vermittelt ("Recitation in Applied Mechanics," "Introduction to the Sciences," und "Fields of Technology"). Die fortlaufende Entwicklung von EUROTECH-gerechten, interaktiven Computer-Programmen, sorgfältig geplanten kurzen Studienreisen nach Deutschland und Industriepraktika, die US-Niederlassungen deutscher Firmen sowie Firmen in der Bundesrepublik anbieten, runden das Kursangebot ab. Diese Programmkomponenten sollten sich möglichst zu einer umfassenden Ausbildung zusammenfügen; im Interesse von Industrie und StudentInnen sollte das effektive Wechselwirken der Komponenten und der Lernerfolg der StudentInnen ständig überprüft und verbessert werden.

Es schien uns unerläßlich, verschiedenste Beurteilungsinstrumente regelmäßig einzusetzen, um eine solche innovative Weiterentwicklung des Programms zu gewährleisten. Das Bewertungsinstrumentarium sollte unter anderem Effektivität der Lehre im Bereich "Deutsch für Ingenieure", studentischen Fortschritt in Deutsch und im kulturellen Fremdverständnis, sowie Adäquatheit der technischen Vorbereitung bei EUROTECH StudentInnen messen.

Neben quantitativen Informationen, die wir aus Testergebnissen und Notenspiegeln der Uni-Klassen beziehen konnten, suchten wir auch nach qualitativen, und zwar mit einem Blick auf Entwicklungsverläufe und Endergebnisse. Diagnostische Eingangstests und Befragungen, aber auch Abgangsbeurteilungen von Absolventen und Studienabbrechern, die Globalbewertungen des Programms beinhalteten, erschienen uns besonders wichtig. Studentische Selbstbeurteilungen sollten ebenso ins Gewicht fallen wie die Ergebnisse standardisierter Tests. In der Ausarbeitung der Beurteilungsinstrumente folgten wir den Empfehlungen des National Foreign Language Center: "In addition to providing an overall assessment of the level of proficiency at the end of training, tests should provide feedback to improve both the student's learning and the quality of instruction. In addition, some tests should measure the learner's capacity to perform specific tasks or should provide a diagnosis of achievements and errors to help both students and teachers improve the learning process."[5] Um den Blindstellen in der Resultatsanalyse entgegenzuwirken, wurden zwei externe Gutachter gebeten, das Programm alle drei Jahre zu beurteilen und uns Verbesserungvorschläge zu unterbreiten. Diese intern und extern differenzierte Programmüberprüfung institutionalisierten wir als kontinuierlichen Prozeß, als KVP eben.

Die Programmbewertung läßt sich in drei spezifische Kategorien einteilen: 1) Sammlung und Auswertung wesentlicher Information über EUROTECH Teilnehmer; 2) Überprüfung erworbener Fähigkeiten von EUROTECH StudentInnen; und 3) Erkenntnis über motivations- und fortschrittsfördernde bzw. -hemmende Aspekte des Programms.

Wir sammeln Informationen zu den Einschreibungen und Ausfallsquoten in den Fachbereichen Deutsch und Ingenieurwesen und vergleichen diese mit den Zahlen für EUROTECH. Wir fragen uns z. B., wie hoch der Prozentanteil von EUROTECH StudentInnen in der "School of Engineering" ist. Wenn national zirka 60% aller StudienanfängerInnen ihr Studium frühzeitig abbrechen, wo steht die University of Connecticut, und wo steht EUROTECH? Um hier eine Datengrundlage zu erhalten, werden die "high school"-Abschlüsse (Resultate der Scholastic Aptitude Tests/SAT) sowie der Notendurchschnitt an der Universität von IngenieursstudentInnen im allgemeinen und EUROTECH TeilnehmerInnen im besonderen miteinander verglichen. Das Studentenprofil wird nuanciert durch Befragungsresultate, die uns über persönliche und berufliche Ziele der EUROTECH StudentInnen Auskunft geben. Interessant ist dabei, wie genau Studienziele formuliert werden, aber auch, wie sich diese Ziele im Laufe des Studiums verändern. Es ist auch vorgesehen, Daten zum Studienabgang zu sammeln: bei welchen und wievielen Firmen sich EUROTECH StudentInnen (im Vergleich mit anderen IngenieursstudentInnen) bewerben, was für Einstiegsstellen sie finden, welche Rolle ihre Spezialausbildung dabei spielt, wie sich ihre Berufswege langfristig entwickeln und welchen Beitrag zur Internationalisierung der amerikanischen Wirtschaft sie im Rahmen ihrer jeweiligen Beschäftigungen leisten. Intensiver Kontakt zu den AbsolventInnen des Programms und die Aufzeichnung eines ausführlichen Feedbacks sollte dem EUROTECH Programm lebendigen Realitätsbezug sichern. Außerdem kann auf diese Weise das Netz von Praktikantenstellen ausgeweitet werden.

Die Rückkopplung von Lernresultat und Lernprozeß umfaßt die technische und die fremdsprachliche Seite der EUROTECH-Ausbildung. Wir überprüfen die Qualität der technischen Kompetenz durch eine Kombination objektiver und subjektiver Angaben: die akademischen Leistungen in der Ingenieurswissenschaft werden durch Noten festgehalten. Schulwissen und Vorbereitung auf die Industrie werden durch Beurteilungsbögen bewertet, die nach jedem

Industriepraktikum von den Vorgesetzten der EUROTECH PraktikantInnen ausgefüllt werden. Von den Resultaten der US-Sommerpraktika hängt ab, ob die EUROTECH StudentInnen den sechsmonatigen Einsatz in der deutschen Industrie antreten können. Das vorgeschriebene Abschlußprojekt, das alle StudentInnen im Ingenieursbereich vorlegen müssen, wird im EUROTECH Programm nicht nur von UniversitätsprofessorInnen, sondern auch von deutschsprachigen Ingenieuren aus ortsansässigen Unternehmen beurteilt. Die Stellenangebote und Einstiegspositionen der EUROTECH AbsolventInnen dienen mithin als zusätzlicher Maßstab für die Qualität der technischen und sprachlichen Ausbildung.

Auf die Dokumentation des Studentenprofils, des studentischen Fortschritts und der Fähigkeit beim Studienabgang wird im EUROTECH Programm größter Wert gelegt. Zum einen werden in den regulären Kursprüfungen die Deutschkenntnisse der EUROTECH TeilnehmerInnen im Vergleich mit einer Kontrollgruppe bewertet. Außerdem zeigen die Ergebnisse von national einheitlichen "oral proficiency tests", inwiefern IngenieursstudentInnen ihr eigenes Lernerprofil und damit ein spezifisches Lerntempo haben.[6] Diese Tests erlangen besondere Bedeutung für eine vergleichende Analyse vor und nach dem Industriesemester im Ausland. Die international anerkannten Prüfungen des Goethe Instituts, die Zertifikatsprüfung und die Zentrale Mittelstufenprüfung, legen die StudentInnen jeweils nach vier Semestern beziehungsweise nach dem Praktikum in Deutschland ab. Die Resultate dieser Examina geben nicht nur den EUROTECH-DozentInnen Aufschluß über das Niveau der fremdsprachlichen Kommunikationsfähigkeit der Studenten; das gute Bestehen der Goethe-Prüfungen fällt auch bei Stellenbewerbungen positiv ins Gewicht. Sogenannte "portfolios," Mappen mit ausgewählten, chronologisch repräsentativen Studentenarbeiten, erlauben zusätzliche qualitative Leistungsinformation und auch eine Beurteilung der gesamten Lernentwicklung bestimmter Klassen und Jahrgänge.

Zum Thema "interkulturelles Verständnis und Sensibilität" gibt es nur wenige Vorlagen und Befragungsinstrumente; wir verfügen allerdings über diverse selbstentworfene Fragebögen. So haben wir z. B. Bögen ausgearbeitet, die feststellen sollten, was für Vorstellungen EUROTECH-AnfängerInnen von Deutschland (und seiner politischen, wirtschaftlichen und gesellschaftlichen Landschaft) haben. Die Antworten wurden verglichen mit jenen, die unmittelbar nach einer Studienreise nach Deutschland auf die gleichen Fragen gegeben wurden. Aufschlußreiche Informationen zum Ausmaß von Fremdverständnis liefern auch die Resultate zahlreicher landeskundlicher Aufgaben, die EUROTECH TeilnehmerInnen während ihrer Studienreisen ausfüllten. Um die Aufgaben zu lösen, mußten sie z. B. in Deutschland Werbeplakate betrachten, deren Darstellungen, Texte, und Werbeobjekte analysieren und dann ihre eigenen Reaktionen schildern und erklären. Die unweigerlichen Vergleiche zwischen den Kulturen führten zu interessanten Einsichten in eigene Wertvorstellungen. Das schwierigste aber zugleich wirkungsreichste landeskundliche Element der Ausbildung ist natürlich das sechsmonatige Praktikum bei einer deutschen Firma. Über die Probleme der Fremdbegegnung und den Wandel des Fremdverständnisses erfahren wir aus Tagebuchberichten, die im EUROTECH Programm vorgeschrieben sind. Die regelmäßige Kritik der Germanistik-DozentInnen zielt auf verstärkte studentische Selbstreflexion und erhöhte Wertdifferenzierung ab.[7]

Wie oben erwähnt, soll eine dritte Kategorie unserer Bewertungsinstrumente Auskunft über motivations- und fortschrittsfördernde bzw. -hemmende Aspekte des Programms liefern. Neben den üblichen Kursbeurteilungen der Universität, die eine Reihe von Zusatzfragen an die Studenten erlauben, benutzen wir im EUROTECH Programm regelmäßig maßgeschneiderte Fragebögen, die auf die Besonderheiten des Lehrangebotes eingehen. Selbstverständlich sind all diese Befragungen anonym.

Wir erfahren aus den Antworten, wieviel Zeit pro Woche EUROTECH StudentInnen für ihr Deutschstudium aufwenden. Wir erfahren, warum und weshalb sie den EUROTECH-Abschluß haben wollen, welche Unterrichtsmethoden ihnen am tauglichsten erscheinen, welche Elemente des Sprach- und Kulturerwerbs ihnen am schwierigsten vorkommen, wie gelungen ihnen die Koordination zwischen technischem Stoff und Sprachunterricht erscheint, welchen Gewinn sie aus der Zusammenarbeit mit deutschen Assistenten ziehen, welche Sonderveranstaltungen im Deutschprogramm sie als sinnvoll und lehrreich empfinden, oder welche Gastvorträge deutscher Ingenieure ihnen am besten gefallen und warum. Die studentischen Beurteilungen der Sommerpraktika werden in gesonderten Fragebögen gesammelt. Auch diejenigen, die ihr EUROTECH Studium abbrechen, bitten wir, uns über ihre Erfahrungen Auskunft zu geben. Wir wollen wissen, ob die Fremdsprache oder die Anforderungen des Ingenieurstudiums den Ausschlag für ihre Entscheidung gaben. Außerdem ist es wichtig für uns zu erfahren, ob und wie sich die studentischen Vorstellungen vom Ingenieursberuf von der Realität der akademischen Vorbereitung unterscheiden.

Die Auswertung dieses fortlaufenden Beurteilungsprozesses erlaubt kurzfristige Veränderungen in der Unterrichtsgestaltung sowie langfristige Modifikationen im Programm. Der kontinuierliche Rückgriff auf Studentenbefragungen verlangt von den EUROTECH Organisatoren klare Zielsetzungen, verleiht dem Programm aber auch die Flexibilität eines Projekts, das einen kontinuierlichen Verbesserungsprozeß institutionalisert hat.

Anmerkungen

[1]. Als Beispiele für diese Debatte, vergleiche "German Apprentices: A Key to Boom," New York Times, February 6, 1993, A: 1 and 5. "Employers Wary of School System," New York Times, February 20, 1995, A:1 and C:8. Albert Shanker, Commentary on Stephen F. Hamilton's Apprenticeship for Adulthood: Preparing Youth for the Future (New York: The Free Press, 1990) in New York Times, k. D., k.S.

[2]. Nicht all zu viele Technische Hochschulen bzw. Ingenieursabteilungen in den USA verpflichten ihre StudentInnen zu einem oder mehreren Industriesemestern. Immer mehr StudentInnen wollen jedoch ein Jahr mit ihrem Studium aussetzen, um sogenannte "cooperative work experience" (Arbeitserfahrung) zu sammeln. Selten können sie diesen Einsatz akademisch anrechnen lassen.

[3]. Vergleiche dazu Maria-Regina Kecht und Thomas Strack, "Intercultural and Communicative Aspects in the LSP Curriculum: German & Engineering at the University of Connecticut." In Germanics Under Construction: Intercultural an Interdisciplinary Prospekts, hrsg. von Jörg Roche and Thomas Salumets (München: iudicium, 1996).

[4]. Andreas Pauldrach. "Eine unendliche Geschichte. Anmerkungen zur Situation der Landeskunde in den 90er Jahren." Fremdsprache Deutsch, Heft 6, 8.

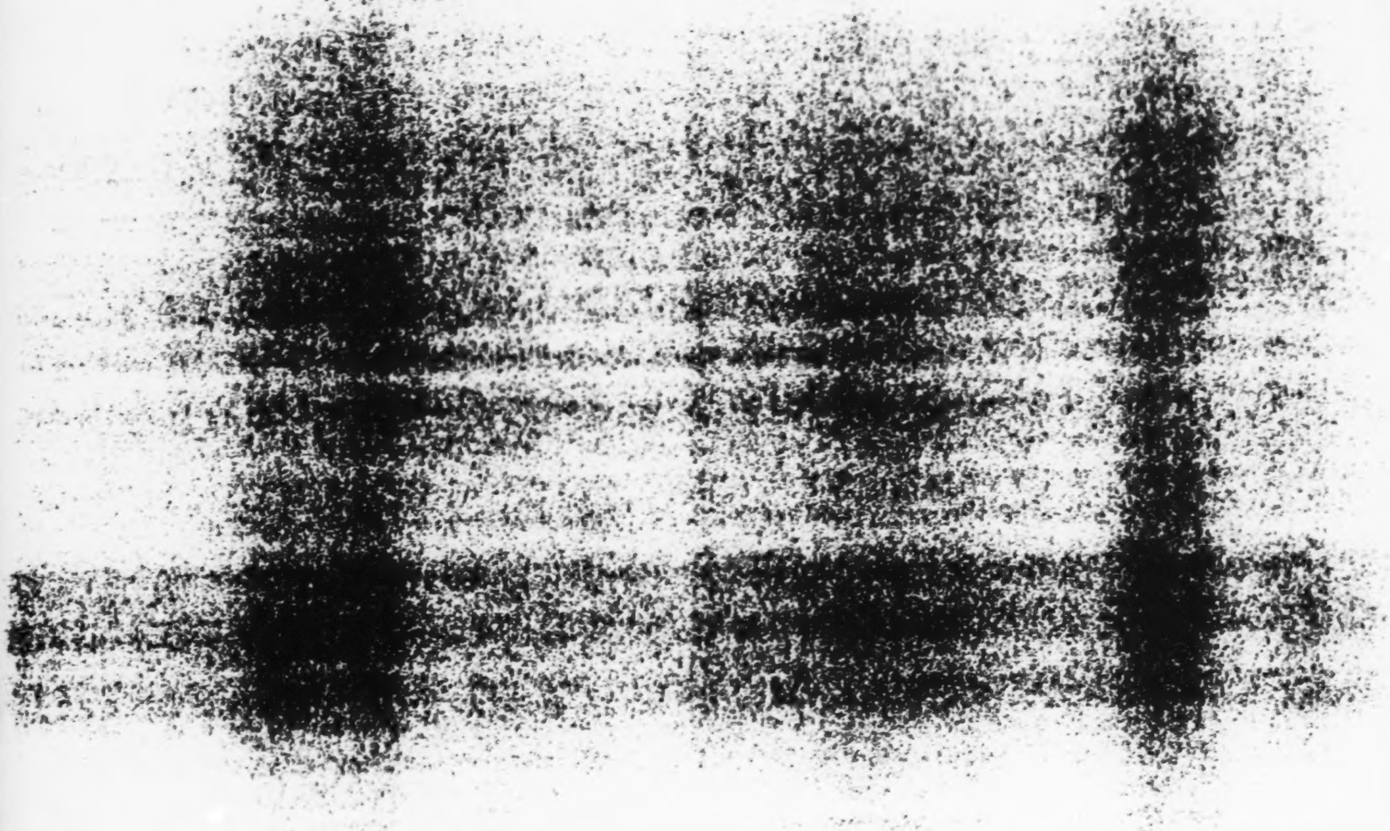
[5]. Richard D. Lambert, "Foreign Language Planning in the United States," in NFLC Occasional Papers (Oct. 1992).

[6]. Vergleiche dazu Kandace Einbeck, "Learning Styles and Successful Language Learning: The Case of German for Engineers at the University of Rhode Island," Dissertation, die 1995 an der Universität von Connecticut eingereicht wurde. Frau Einbeck hatte Gelegenheit, einige Jahre lang an der University of Rhode Island für ihr Forschungsprojekt relevante Erfahrung zu

sammeln. Sie war in einem erfolgreichen internationalen Programm, das Deutsch und Ingenieurswesen miteinander verbindet, als Lektorin tätig.

[7]. In bezug auf das Lehrziel für interkulturelle Fähigkeiten wie auch für den Spracherwerb erwarten wir, daß die StudentInnen wenigstens einen bestimmten Schwellenwert überschreiten. Wir folgen dabei den Forschungsvorschlägen von Milton J. Bennett, der interkulturelle Sensibiliät in Stufen der persönlichen Entwicklung definiert. "This developmental model posits a continuum of increasing sophistication in dealing with cultural difference, moving from ethnocentrism through stages of greater recognition and acceptance of difference, here termed 'ethnorelativism'." In M. Bennett, "Towards Ethnorelativism: A Developmental Model of Intercultural Sensitivity," in Education for the Intercultural Experience, hrsg. von R. Michael Paige (Intercultural Press, Inc., 1993) 22.

APPENDIX O



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November 7, 1996

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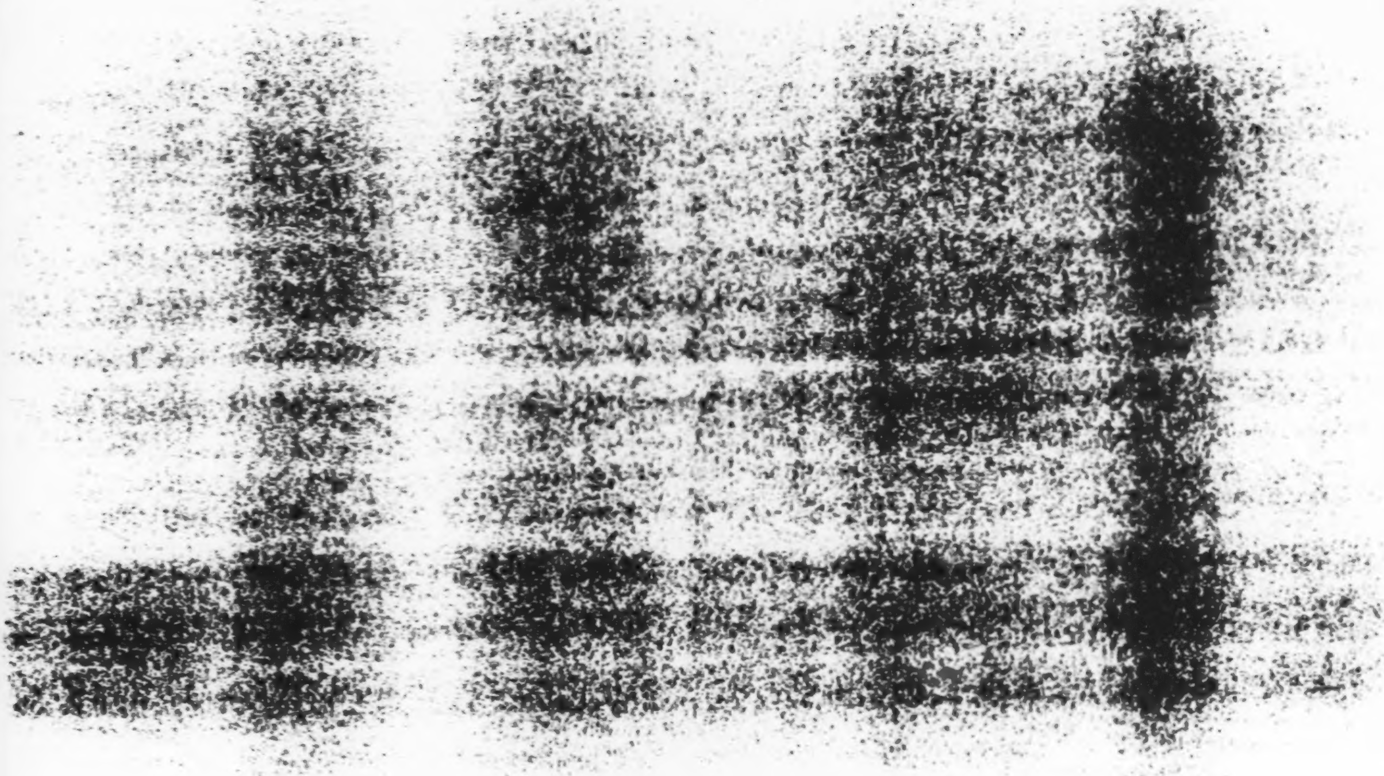
APPENDIX P



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EUROTECH Internships
GERMAN Companies Visited

COMPANY VISITED	PERSON(S) CONTACTED	LOCATION
AUDI AG	Dieter Haberkern	Neckarsulm
BAYER	Bruno Englehard	Leverkusen
BIZERBA	F. von Kleinsorgen	Balingen
CODEMA INTERNATIONAL GMBH	Rainer Meschkat	Frankfurt am Main
DAMES & MOORE	Lawrence F. Voors Robert E. Cadow	Liederbach
DAIMLER BENZ	Johannes M. Töpler	Stuttgart
DÖRRIES SCHARMANN	Heinz Hintzen	Mönchengladbach
EUMUCO	Klaus Teipel	Leverkusen
gambro	Hartmut Pruss	Hechingen
HÜLLER HILLE	H. Benda	Ludwigsburg
IBM	Renate Dammann Dieter Jonatzki	Stuttgart
interstuhl (Wilhelm Link, GmbH & Co. KG)	Joachim Link Richard Eppler Alfred Merz	Hechingen
KLINGENBERG	Jürgen Rohmert	Hükeswagen
MAHLE GMBH	Helmut Sprenger	Stuttgart
MAN ROLAND	Dieter Singer	Augsburg
MERCEDES-BENZ	Dieter Gollnick Jügen Hachenberg Hans Zechmann	Stuttgart
OTIS GmbH	Herbert Horbrügger	Berlin

Companies, EUROTECH

RHEINMETALL BERLIN AG	Jügen Latza	Düsseldorf
ROBERT BOSCH GMBH	F. Gabriele Winter	Stuttgart
ROHDE & SCHWARZ GmbH & Co.KG	Claudia Dirnberger	Munich
STIHL	Hans Nolting	Waiblingen
TRUMPF	Friedemann Schweizer Dr. Bernd Mez	Ditzingen
TÜV Product Service	Hartmut Ritscher	Munich
VAW Aluminium AG	H. Geißen	Grevenbroich
VERKEHRSANLAGEN CONSULT GmbH	Burghard Kühn Dietrich Braun	Berlin
VORWERK & CO	Georg Glade	Wuppertal
WEBASTO THERMOSYSTEME GmbH	Astrid Zimmermann	Stockdorf

APPENDIX Q

[illegible]

EUROTECH--FRAGEBOGEN

für deutsche Firmen oder amerik. Niederlassungen in Deutschland

1. Name der Firma:

2. Kontaktperson(en) und deren Telefon- und Faxnummern:

3. Bereich(e), in dem (denen) Praktikanten der Ingenieurswissenschaften (inkl. Informatik) eingesetzt werden könnten:

4. Bevorzugte Zeitperiode(n) für die Einstellung von Auslandspraktikanten (z. B. Januar- Juli):

5. Fähigkeiten, die Sie bei Praktikanten voraussetzen :

6. Welche Unterlagen brauchen Sie, um sich von potentiellen Praktikanten ein gutes Bild machen zu können?

7. Welche Unterlagen sind notwendig für eine Einstellung von Auslandspraktikanten?

8. Werden Praktikanten einem Arbeitsteam zugeordnet? Ist Teamwork in Ihrer Firma wichtig?

9. Unterkunftsmöglichkeiten für Praktikanten:

10. Wären EUROTECH-Absolventen von Interesse für Ihre Firma (hier oder in den USA) ?

APPENDIX R

UNIVERSITY OF
CONNECTICUT

EUROTECH
International Engineering
Richard P. Long, Co-Director

Brief Comments on Summer Internships for EUROTECH Students

The duties assigned should be similar to those assigned to the typical cooperative engineering student. They usually assist in a technical aspect of the manufacturing process. It would be helpful for the student's future internship in Germany to expose him(or her) to the various materials, activities, and operations used in manufacturing your products.

Our students will be close to their senior year before they have a command of the language good enough to profit from a work period in German industry. At a comparable educational level their German counterparts have spent about eighteen to twenty weeks completing a basic industrial internship required by their university, and are ready to begin an engineering internship. Last summer we discussed the preparation of our students with representatives of the twenty-one German industries we visited. For our students to have an engineering internship in Germany, they need some practical experience in the U.S.A.

As an example we reviewed the industrial internship requirements of the University of Munich, which are similar to most others, and found that they fall into two categories:

1. Basic operations on the materials used in industry.

2. Activities of production.

With the activities under item 1 the student becomes familiar with such routine processes as filing, sawing, drilling, grinding, cutting threads, bending, cutting, shearing, milling, riveting, soldering, hardening, welding, casting, galvanizing, extruding, gluing, etc. The student completes the basic internship with the activities under item 2, which can be described as those creating a product. These activities vary with each discipline. Examples for some disciplines include: for the mechanical engineer it may involve form-building, casting, and assembly; for the electrical engineer, electrical testing and verification; for the civil engineer, construction activities.

It is not expected that our students will become exposed to all of the operations in their specialty but as a goal we would like to send students to Germany who are familiar with the processes that occur in their specialty i.e. on the shop floor, the construction site, the clean assembly room, or any other operation where the engineered product takes its form and shape.

1881

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261 Glenbrook Road, U-37, Storrs, Connecticut 06269-2037 (860) 486-2074 Fax: (860) 486-2298 e-mail: long@uconnvm.uconn.edu

APPENDIX S

SUPERVISOR'S QUESTIONNAIRE CONCERNING EUROTECH STUDENT PERFORMANCE

1. Name of the Student Laura Harris

2. Name and address of the company

Bayer

Pharmaceutical Division

Gary G. Toczylowski
Manager, Environmental and Safety Affairs

Bayer Corporation
400 Morgan Lane
West Haven, CT 06516-4175
Phone: 203 937-2339
Fax: 203 937-2044

3. Name of the person completing this report ___________

4. Name of the student's immediate supervisor ____________________

5. Describe the duties assigned to the student. Please indicate the interaction of the student with employees of your company, and the role of the assigned duties to the basic activity of your company.

Please see attached.

Name of Student____________________

6. Evaluation of the performance of the student. Please be specific. If performance varied from assignment to assignment, please indicate. (Use additional sheets if needed)

7. Comment on the student's ability to function in a team (if this applies), to work independently, to be responsible and reliable. (Use additional sheets if needed)

Please return when completed to:
Prof. Richard P. Long
Department of Civil and Environmental Engr.
University of Connecticut
Storrs, CT 06269-2037

5. Laura was assigned a variety of tasks, of both long and short term duration. In particular, she was given two long term assignments. The first, was to collect existing information on all waste streams generated on site, and assemble this information ultimately into a site waste master plan. This document would then prove useful in the future planning of site waste management activities as our site continues to grow. She was also given the task to complete the mapping of hazardous chemicals in our on site laboratories. This project was stalled, and it was her job to complete it. During the course of both of these sizable projects, Laura was forced to interact with a wide variety of departments on site. She had to communicate with research scientists, drafting department personnel in the Engineering department, manufacturing personnel as well as Sanitary Maintenance personnel who move the trash. She did so in a very professional fashion, and I heard nothing but good things about her interactions.

She was also given many short term assignments such as the combining of a variety of process safety checklists into one document, and the organization of a large collection of material safety data sheets. She even researched possible wastewater treatment technologies associated with the production of both existing and new drug products for our site. For this, she was forced to communicate with another facility of Bayer in Kansas City.

Laura was a big asset to the Health, Environment and Safety Department for the short time that she was here.

6. Laura was very detailed oriented and very thorough in the completion of her assignments. In an organization such as ours, we do not often have the time to complete all tasks with the level of thoroughness that she did. We typically are juggling so many issues that our emphasis is on doing a little on many different fronts at once. Laura was able to handle several issues at once, and completed tasks given to her with surprising speed, considering the small amount of direction that I gave her. She obviously was able to figure things out on her own, something that I try to have the other employees that work for me do all the time. She fit right in. She was able to accomplish some tasks so quickly that she was constantly challenging me to keep up with her. I think she was able to solicit help on issues easily. She made a number of friends here, especially the drafting personnel in Engineering. They taught her, in what seemed to be a matter of days, how to operate the CAD system so that she could utilize this software to complete her two large assignments.

Overall her performance was excellent. She really added significantly to the amount of work that my department completed during the short time that she was here. The waste master plan that she prepared was done so well, that it was presented to upper management who is now using it as a source of information on which to base decisions on potential future site changes.

7. As I previously mentioned, my management style is to give very little direction on tasks. This forces an individual to figure it out on their own. Laura did so well. When she was stuck on an issue, she came to me and asked very specific questions aimed at getting the information that she need to continue. However, this didn't really happen all that frequently. To accomplish the two large tasks she was forced to work closely with the drafting personnel in Engineering, as well as many others on site to gain access to information. She did so very well. I knew that I could count on Laura to get something done once I gave her the initial assignment. She did not need very much supervision.

Finally, being able to speak German was also a benefit both to her and me as well. Being a German based company, we tend to do things a little differently than American based companies. Many of our strategic long term business plans and objectives are established in Germany. Laura found herself occasionally speaking German with Directors and Vice Presidents, and even participated in an after work German language exchange gathering once/week. Being able to speak German is seen as a benefit in this company for both the individual as well as their supervisor.

I would welcome her back to work here again next summer, if she can find the time in her hectic schedule.

Gary Tauylowski
9/17/96

EUROTECH Student's Summer Work Report

to be submitted to Profs. Kecht, Long, or DeVries by Sept. 30, 1996

1. Your Name Laura Harris

2. Your Home Address 101 Laurel Trail, Glastonbury, CT 06033-4055

3. Name and address of the company offering summer employment

Bayer Corporation
400 Morgan Lane
West Haven, CT 06516-4175

4. Name of your immediate supervisor Gary Toczylowski

5. Department in which you are employed Health, Environment and Safety

6. Describe your primary duties

In your description please indicate a) the activities related to materials and those related to assembly, design, or any other function of manufacturing; b) the relation between each activity and the basic business of the company. Also note the number of weeks spent on each.

Please be precise and specific in your answer.

My main responsibility was to create a Master Plan for the waste management on site. I identified and (using AutoCAD) mapped out the locations of waste storage and generation on site. I also conducted interviews with the individuals responsible for waste transportation and disposal in order to determine the mode of transport to each receptical, the frequency each receptical was visited, the frequency it was emptied, and the volume of each receptical. This was done for garbage, recycle, chemical waste, biomedical waste, radioactive waste, and product waste. I then mapped out a location on site where the waste storage could be centralized in the future. I spent about 10 weeks working on this project.

7. Other duties

Include the details requested under primary duties.

I also worked on creating maps of Lab Chemical Storage Areas for all buildings on site. These were made using AutoCAD and were to be used to inform fire fighters of potential hazards in each lab in the event of a fire. I also worked on updating MSDS files, revising the Pre-Start up Review Checklist and the Preliminary Safety Review Checklist, and on updating and sending out Emergency Response Plans to area Hospitals

8. How much German did you use while doing your internship?

I spoke some German with employees who were originally from Germany. I was also given the opportunity to participate in German classes twice a week.

9. Describe the most valuable aspects of your internship. Please be precise and specific.

I enjoyed working with a variety of people from many different backgrounds. I found that communication skills are extremely important. It is impossible to get any job done without communicating with other people, through talking on the phone or in person, or through writing or even drawing.

I also gained more of an understanding for working in a large international company.

10. What was most difficult or most challenging about your work?

Conducting informal interviews with other employees to collect the information I needed for my Master Plan. I found I needed to be very organized and prepared so that I could phrase my questions in such a way as to get the answers I was looking for, I needed to be organized so I could get all my answers relatively quickly without taking up too much of their time. I also had to listen carefully to digest all the information that was given to me.

11. Write an essay on your work experience (approx. 300-400 words) in **German.** Please comment on what you did, what you learned, how you liked your work, how your work links up with your academic training, and how this experience has shaped your notion of engineering work.

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Laura Harris

13.9.96

Meine Arbeit bei Bayer

Diesen Sommer arbeitete ich bei Bayer Pharmeceutical in West Haven, Connecticut. Ich arbeitete für den Bereich Gesundheit, Umweltschutz und Arbeitssicherheit. Mein Projekt war es, ein Plan des Abfallmanagement zu schaffen. Ich habe alle die Abfallagerstätten und Abfallgenerationen herausgefunden. Dann benutzte ich AUTOCAD, um die Lagerungen in jedem Gebäude zu dokumentieren. Ich hatte auch viele Gespräche mit den Arbeitern, die den Abfall transportieren und entsorgen. Aus den Gesprächen lernte ich viel. Ich identifizierte wie der Abfall transportiert wurde, wie oft jeder Abfallcontainer benutzt wurde, wie oft jeder Abfallcontainer geleert wurde und wie groß jede Abfallcontainer war. Ich machte alle für den Müll, die Wiederverwendung (das Papier, die Pappe, das Plastik, das Glas und das Metall), die Chemischverschwendung, die Radioaktivverschwendung und die Produktverschwendung. Dann zeichnete ich Gebiete ein, wo man alle die Abfall zentralisieren könnten. Ich half meinem Chef auch mit vielen anderen Dinge. Ich benutzte AUTOCAD, um Karten der Laborchemikalienlagerungen zu zeichnen. Die Karten werden benutzt, um die Feuerwehrmänner über die Gefahren in die Laboren zu informieren.

Meine Arbeit war sehr interessant, und ich habe viel dabei gelernt. Jetzt verstehe ich besser wie die Arbeit in eine internationalen Firma ist. Bayer hat mehr als 140,000 Arbeiter und Angestellte, die bei mehr als 350 Gesellschaften in ungefähr 140 Ländern arbeiten. Ich finde das sehr groß. Es gefällt mir, weil bei Bayer gibt es immer etwas neues mit dem ich arbeiten könnte, immer etwas neues, was ich lernen könnte und immer mehr Leute zum kennenlernen. Diesen Sommer lernte ich deutsche Leute kennen, die bei Bayer in Leverkusen arbeiten, und auch viele amerikanische Leute, die bei Bayer in Leverkusen gearbeitet hatten. Ich finde Kommunikation sehr wichtig für allen Arbeiter und Angestellte. Man kann seine Arbeit nicht gut machen ohne mit anderen Leuten zu sprechen. Sprachfähigkeiten und Schreibfähigkeiten sind beide ganz wichtig. Deshalb sind sprachbegabte Arbeitern in internationalen Firmen notwendig und wertvoll. Jetzt habe ich Lust bei Bayer in Leverkusen zu arbeiten. Nachdem ich mein Studium beendet habe, möchte ich bei einer Internationale Firma arbeiten. Ich finde, daß das EUROTECH Programm eine gute Vorbereitung für einen internationale Beruf ist, weil man Ingenieurwesen und Deutsch studieren kann.

SUPERVISOR'S QUESTIONNAIRE CONCERNING EUROTECH STUDENT PERFORMANCE

1. Name of the Student Brian Schwegler

2. Name and address of the company Johnson & Johnson Medical Inc.
West Queen Str.
Southington CT 06489

3. Name of the person completing this report Zino Altman

4. Name of the student's immediate supervisor Zino Altman

5. Describe the duties assigned to the student. Please indicate the interaction of the student with employees of your company, and the role of the assigned duties to the basic activity of your company.

Brian performs the duties of the entry level development engineer. His responsibilities include ~~des~~ handling some projects (magnitute of $10-$30000.00) on his own, and working with other project leaders as a support for the larger scale tasks.

Most of the projects, Brian working on is a high priority work needed for the successful company functioning. However couple of longer term research projects were initiated, as well.

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Name of Student Brian Schwegler

6. Evaluation of the performance of the student. Please be specific. If performance varied from assignment to assignment, please indicate. (Use additional sheets if needed)

Very solid performance well above expectations. Works independently, does not require a lot of coaching. Brian deliver his work well done, on timely fashion.

7. Comment on the student's ability to function in a team (if this applies), to work independently, to be responsible and reliable. (Use additional sheets if needed)

Brian Schwegler is reliable and responsible team member. Pleasant co-worker with high communication skills, and good understanding of the projects goal

Please return when completed to:
Prof. Richard P. Long
Department of Civil and Environmental Engr.
University of Connecticut
Storrs, CT 06269-2037

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EUROTECH Student's Summer Work Report
to be submitted to Profs. Kecht, Long, or Strack by August 15, 1995

1. Your Name Brian Schwegler

2. Your Home Address 95 Trinity Ave, Glastonbury CT 06033

3. Name and address of the company offering summer employment

Johnson & Johnson
MEDICAL INC.
285 WEST QUEEN STREET, SOUTHINGTON, CT 0648

4. Name of your immediate supervisor Zinovy (zee) Altman

Above Zee is Doug field who hired me and is also my supervisor.

5. Department in which you are employed Product Development Engineering

6. Describe your primary duties
In your description please indicate a) the activities related to materials and those related to assembly, design, or any other function of manufacturing; b) the relation between each activity and the basic business of the company. Also note the number of weeks spent on each.
Please be precise and specific in your answer.

Primary manufacturing product = Vascular Access Catheters
we make about 150 millon/yr

My product Development group includes a team of Several Engineers that I work with on projects: ie
Process Qualification for new extrusion line.
Injection molding parts reasearch
Material Analysis for new products or revision of old one
Project to eliminate Hexane in silicone lubrication process to comply with D.E.P. regulations.
Design of new inovative low cost catheter (molding)
Polymer research. Deal with companies such as Dow, Du Pon
Developed computer skills on Microsofts latest Excel, Word and powerpoint.
Test materials using Rheometer and analyse DATA.
Research with Excimer 700 Laser system for Bevel Technolo

7. Other duties

Include the details requested under primary duties.

- Computer Anilization using Microsoft Excel to compile Data, put together reports for presentation.
- Help Engineers with current and New projects as they become Avialable or of higher priority.
- Compile process Qualification and Failure Mode Effects Analysis Reports
- Analyse Material Safety DAta Sheets.

8. How much German did you use while doing your internship?

Unfortunately very little. J&J is not German owned but they do have J&J Medical In in Germany. I'm not sure what they do there.

9. Describe the most valuable aspects of your internship. Please be precise and specific.

Working in an atmosplere with manufacturing, research, Engineering and Business office all in the same building I got a good look at how a Med. Size Co. is run and the challanges that are faced. I learned about extrusion, lasers, injection molding and assembly. Computer skills were sharpened as well.

10. What was most difficult or most challenging about your work?

When faced with a problem to solve I often needed to find out what recources were available to find information and who would know most about what I wanted to know. Being new to a company can make that difficult.

11. Write an essay on your work experience (approx. 300-400 words) in German. Please comment on what you did, what you learned, how you liked your work, how your work links up with your academic training, and how this experience has shaped your notion of engineering work.

Ich studiere in meinem Hauptfach Ingenieursgebiete auch auf deutsch. Dort lerne ich auch technisches Deutsch. Meine Zensuren in meinen beiden Hauptfächern liegen über dem Durchschnitt. Im Frühling (1997) werde ich mein 5-jähriges Studium mit einem B.A. in Deutsch und einem B.S. in den Ingenieurswissenschaften abschließen. Dann würde ich gerne bei einer amerikanischen Firma in Deutschland oder einer deutschen Firma in Amerika arbeiten.

APPENDIX T

The University of Connecticut Survey of Courses and Teaching

Instructor ______________ Department ______________ Course No. ______________ Section ______________

Campus: S   Term: SPRING   Year: 1996   Enroll ______________

USE NO. 2 PENCIL ONLY ● CORRECT MARK   INCORRECT MARKS ✓ ⊗ ⊙ ◕

MAKE DARK MARKS THAT COMPLETELY FILL THE CIRCLE • MAKE CLEAN ERASURES • MAKE NO STRAY MARKS

FOR OFFICE USE ONLY

5	⓪	①	②	③	④	●	⑥	⑦	⑧	⑨
1	⓪	●	②	③	④	⑤	⑥	⑦	⑧	⑨
2	⓪	①	●	③	④	⑤	⑥	⑦	⑧	⑨
9	⓪	①	②	③	④	⑤	⑥	⑦	⑧	●
5	⓪	①	②	③	④	●	⑥	⑦	⑧	⑨
0	●	①	②	③	④	⑤	⑥	⑦	⑧	⑨
0	●	①	②	③	④	⑤	⑥	⑦	⑧	⑨
0	●	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4	⓪	①	②	③	●	⑤	⑥	⑦	⑧	⑨

SEMESTER STANDING
○ 1-2 ○ 7-8
○ 3-4 ○ 9 or more
○ 5-6 ○ Graduate

EXPECTED GRADE IN THIS COURSE
○ A ○ D ○ Pass
○ B ○ F ○ Audit
○ C

IS COURSE IN MY MAJOR
○ Yes
○ No

CUMULATIVE AVERAGE (GPA)
○ 3.7 and above ○ 0.7-1.6
○ 2.7-3.6 ○ Less than 0.7
○ 1.7-2.6

HOW OFTEN DID YOU ATTEND CLASS?
○ 90-100% ○ 25-49%
○ 75-89% ○ 0-24%
○ 50-74%

Evaluate this instructor/course from **UNACCEPTABLE** to **OUTSTANDING** by filling in the appropriate circle on the scale to the right of each statement.

A. *Regarding the instructor*

	UNACCEPTABLE 1	2	3	4	5	6	7	8	9	OUTSTANDING 10
1. Presented course material in a clear and effective manner	○	○	○	○	○	○	○	○	○	○
2. Overall organization	○	○	○	○	○	○	○	○	○	○
3. Made the objectives of the course clear	○	○	○	○	○	○	○	○	○	○
4. Fulfilled course objectives	○	○	○	○	○	○	○	○	○	○
5. Clarified work assignments and student responsibilities	○	○	○	○	○	○	○	○	○	○
6. Stimulated interest	○	○	○	○	○	○	○	○	○	○
7. Graded fairly and impartially	○	○	○	○	○	○	○	○	○	○
8. Used examination items which stressed important aspects of the course	○	○	○	○	○	○	○	○	○	○
9. Accessibility to students both in and out of class	○	○	○	○	○	○	○	○	○	○
10. Instructor's interest and concern for students	○	○	○	○	○	○	○	○	○	○
11. Preparation for each class	○	○	○	○	○	○	○	○	○	○

STOP! READ DIRECTIONS! THEN GO!

B. *Answer questions 12, 13, and 14 ONLY if this course is designated as a writing course "W", "J", "S", "P" or "Z"*

	1	2	3	4	5	6	7	8	9	10
12. The usefulness of comments received on written assignments	○	○	○	○	○	○	○	○	○	○
13. The relationship of writing assignments to other course material	○	○	○	○	○	○	○	○	○	○
14. The extent to which this course has helped improve my writing	○	○	○	○	○	○	○	○	○	○

C. *Answer questions 15, 16, and 17 ONLY if this course is designated as a computer course "C", "S", "V" or "Z"*

	1	2	3	4	5	6	7	8	9	10
15. The accessibility to computers for hands-on work in this course	○	○	○	○	○	○	○	○	○	○
16. The degree to which the computer was tied into the course material	○	○	○	○	○	○	○	○	○	○
17. The extent to which this course has helped improve my computer skills	○	○	○	○	○	○	○	○	○	○

D. *Answer questions 18, 19, and 20 ONLY if this course is designated as a quantitative course "Q", "J", "V" or "Z"*

	1	2	3	4	5	6	7	8	9	10
18. The instructor's skill in explaining quantitative concepts	○	○	○	○	○	○	○	○	○	○
19. The usefulness of problem sets in learning course material	○	○	○	○	○	○	○	○	○	○
20. The extent to which this course enhanced my quantitative skills	○	○	○	○	○	○	○	○	○	○

E. *Questions 21, 22, and 23 are optional questions provided by your instructor. The evaluation moderator will read these questions to the class.*

	1	2	3	4	5	6	7	8	9	10
21.	○	○	○	○	○	○	○	○	○	○
22.	○	○	○	○	○	○	○	○	○	○
23.	○	○	○	○	○	○	○	○	○	○

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FORM 7231-0734 REV 6/90

German 221 / EUROTECH
Instructor: Prof. H. De Vries
Course Evaluation

Additional questions for C. and D. on form

C. Please comment on the effectiveness of this course in developing you technical German.

D. How effective were your homework assignments and the work on your project for the development of your German skills?

EUROTECH, SPRING 1996
EUROTECH PROGRAM EVALUATION FOR LOWER DIVISION STUDENTS
(Through German 134)

Please fill out this questionnaire as exhaustively as possible. Your feedback is valued and important to the program.

Your semester in EUROTECH ________
Your current German class __________

A. Student Profile

1. What is your opinion of engineering at this point in your studies?

2. In what field of engineering do you plan to specialize?

3. How do you envision German fitting in with your (future) plans?

4. How do you assess your overall academic performance--excellent, good, satisfactory, etc.?

5. How many hours do you study per day? per week?

6. How much time do you dedicate to your engineering classes, how much to your German class? (Give us an assessment in percentages.) What are your expectations for the future in this regard?

7. In the course of the semester, have you made an appointment with the EUROTECH directors, Profs. Long and Kecht, or with Prof. De Vries? Did you talk to them about internships or job opportunities?

8. Are you planning to continue with German? If not, why? Please be specific.

10. Can you envision yourself working at a German company in Connecticut (such as Trumpf)? What would you find especially interesting about that professional prospect? What can you offer such a German-American company. Be specific.

B. German Instruction

1. How would you assess your standing in your German class? What do you expect to learn in your German class, keeping in mind its engineering bent? In what ways have your courses met or not met these needs?

2. Please give your opinion of the "guest presentations" in the German 220, 221, 222 courses?

3. Are you satisfied with the level / amount at which German-speaking engineering faculty are integrated into the language instruction?

4. Did you find the integration of technical materials into the language instruction interesting, stimulating, and/or challenging? Please Explain.

5. Do you study German on a daily basis, or do you feel your schedule forces you to cram just before the exams?

6. Would you like to see more emphasis placed on technical aspects of German language and culture? Do you have any suggestions?

7. Would you like to do much of your homework on the computer? How so?

8. The computer language module "Der Ottomotor" has been available in the language lab for a week now. Have you been able to work with the program? Please comment on its usefulness for your German.

9. Did you regularly go to see German-speaking faculty or TAs for the 5-minute-conversation practice? How useful was this assignment? How did it fit in with your schedule?

10. Did the conversation practice prepare you for the oral exam?

11. Did you find out anything interesting about Germany (the country, the people, industry, etc.)? Did your instructor make an effort to familiarize you with cultural differences between Germany and the U.S.?

12. About which areas or topics would like you like to learn more?

C. Eurotech Program

1. How often have you met with your advisor? Has/have your advisor(s) at the School of Engineering been helpful in guiding you through your studies?

2. Would you like to see social events regularly organized for engineering students taking German?

3. Would you like to see all Eurotech students live in Wright B? Would that be a good way to create a kind of group spirit?

4. Would you like to have a couple or more field trips to German companies in Connecticut per semester? Why/why not?

5. Are you interested in summer jobs at a German or export-oriented American company in Connecticut?

Program Evaluation
for
Upper Division EUROTECH Students
(Spring 1996)

1. What is your major department in the School of Engineering ?

2. How much of your undergraduate study have you completed as of the end of this academic year?

3. What is your primary reason for including German with you engineering studies?

4. What are your career goals at this time? Which has the highest priority?

5. How well informed is your engineering advisor about the EUROTECH program? Do you go to see Prof. Long for additional advice?

6. How have you kept in touch with Prof. Long regarding internships and job opportunities? Do you have your summer organized?

7. How demanding have you found your German courses compared to your engineering courses? What is the major difference in assignments?

8. How would you assess your progress in German over the last year? How much do you practice speaking each week?

9. What additions to the German language instruction would you find helpful in mastering the spoken language? the written language?

10. What do you hope to accomplish during your Praktikumn Germany?

11. Which technical guest presentations did you like best? Did you find the preparation for all the technical lectures appropriate?

12. Would it be helpful to you if you practiced speaking German with your classmates and professors while eating lunch several days a week?

13. What must you work on before you are ready to leave for Germany for your Praktikum?

14. Which technical topics in German would you find interesting and useful ?

15. Please provide any additional comments you may have.

APPENDIX U

[illegible]

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EXTERNAL REVIEW OF THE UNIVERSITY OF CONNECTICUT'S EUROTECH PROGRAM

Submitted by: Prof. William H. Berentsen, Ph.D., Department of Geography, U. of Connecticut (short CV appended)

November 1996

Abstract

The Eurotech Program at the University of Connecticut has in a relatively short time period achieved a good deal of success. Students in the program demonstrate improving language skills and an enthusiasm and appreciation for combining the study of engineering and German language. Students have begun to function within German firms as interns, both in the USA and in Germany. Based on feedback from their students, faculty within the program have already begun to address most of the (small number of) Program-related concerns indicated by them. Both the quality of instruction in the Program and timely faculty responsiveness to student concerns speak well of its success. The greatest problems facing the Program may, in fact, be primarily external in nature—the difficulty in motivating students to study a language, especially in conjunction with the demanding curriculum of the School of Engineering, and a very difficult funding climate at the University of Connecticut related to rapidly falling state support for public higher education. This evaluation focusses primarily on internal characteristics of the Program; it is assumed that the problems related to external conditions are most appropriately addressed by the Program directors.

Introduction

The following evaluation has been based upon reading about 30 multi-page course evaluations completed by students in several different Eurotech courses, examining results of several oral proficiency exams (including follow-up exams for students in sequential years), looking at Eurotech students' overall transcripts, considering input from formal interviews with two faculty members and two students in the Eurotech Program, and taking into account a number of informal conversations with Eurotech participants during about the past two years. The evaluation focusses on objective/quantitative indications of student performance as well as more qualitative assessments by students of their experience within the Program.

In short, both types of input indicate that the Program is achieving its goals, is viewed favorably by students, and is responding to things about the Program that students would like changed or improved. The evaluation only briefly discusses issues and problems that are largely controlled by factors external to the Program, including, for example, numbers of students originally enrolling in Eurotech and resources needed for its continuation.

Indications of Students' Performance in German Language

There are several strong indications of the Eurotech Program's success in improving students' abilities in German. (1) Eurotech students are receiving good scores on oral proficiency exams (OPI) and good grades in German. Grades in the Eurotech courses average about a "B"—close to the average grade the students are receiving in their other courses. (2) Importantly, there has been improvement by all second-time OPI exam takers, perhaps the strongest quantitative indicator that Eurotech is achieving its language instruction goals. (3) Students have begun to take internship positions with German firms, both in the USA and in Germany. This would seem to indicate firms' and students' convictions that students' combined engineering and German preparation is at least adequate to apply to the workplace. (4) Although a number of students have withdrawn from the Eurotech Program (discussed briefly below), evaluations indicate no relationship between this and student dissatisfaction with the Program, but rather their inability to meet the challenging demands of both the engineering curriculum and Eurotech.

Students' Evaluations of the Eurotech Program

Student satisfaction with the Program is quite high, as demonstrated by results from evaluations and interviews. Several students indicate a very high level of satisfaction with the Program, using terms such as "very helpful" and "a convincing factor in my choice to come to UConn" to describe the academic Program, and "thrilled", "fun", and "really happy" to describe their overall experience within it. Students continuing in the Program are nearly unanimous in their belief that it will help their careers and add an interesting, important dimension to their professional and personal lives. Students are also especially pleased with the commitment of Prof. Richard Long (Civil Engineering) to the Program, something that is also clear to the reviewer from Prof. Long's commitments to visit Germany, German firms, and classes and social events associated with Eurotech at the university. Some students do believe that other engineering faculty at the university could be more familiar with the Program and more proactive in encouraging more students to enroll within it. This remains a goal of Prof. Long as well. It should be noted, however, that engineering faculty seem to be supportive and encouraging of students who have already chosen the Program and there are some indications that the engineering faculty and administration are becoming increasingly informed about and supportive of Eurotech. In short, a high proportion of students in the Program express their satisfaction with it and its goals and express their intention to continue with the Program throughout their university educations.

There is a limited amount of information available from students who have withdrawn from Eurotech, including indications of why this occurred. The strongest direct and indirect information indicates that students find the engineering program so challenging for them that they either choose to withdraw completely from it (and Eurotech at the same time) or drop Eurotech in order to try to cope better with the demands of engineering. The poor quality of written expression of a small number of respondents and the limited number of study hours they report to be working indicates a secondary factor affecting withdrawal from Eurotech—the clear lack of academic preparation and maturity among a minority, but ever growing number, of students entering the University of Connecticut. In relative terms this problem could be an even greater challenge for the demanding engineering/Eurotech programs than for other university programs. On the other hand, continued success within the Program could result in an important "positive selection" process for the Program, whereby its success could attract a greater proportion of well prepared and dedicated students, of which there likely remain many in engineering who are not now in Eurotech.

Indications of Faculty Responsiveness to the Needs and Desires of Eurotech Students

There are several indications of faculty dedication to the Eurotech Program and their responsiveness to the needs/desires of students. (1) All Eurotech classes use unsigned, multi-page, largely narrative student surveys that seek a variety of information about each student and his/her experience with the Eurotech course and the Program more generally. Based on results from these, during interviews faculty indicated several actions they have taken to improve and/or alter some aspects of courses and the Program. For example, there has been an increased attempt to incorporate more technical vocabulary instruction into introductory and intermediate courses and a rededicated effort to make long-term efforts to educate engineering faculty about the Eurotech Program and get them to be more active in "marketing" it to existing and incoming students. (2) The lead Eurotech faculty, notably Profs. Long and Kecht (German Language Section), have dedicated a great deal of time and effort to find internal and external funding for the Program, including travel within Connecticut and Germany to identify good internship opportunities for the Program's students. The faculty are also seeking ways to improve classroom instruction by listening to students' comments and developing new and different ways of presenting engineering concepts using the German language. Finally, the lead faculty continue to counsel and encourage students and faculty in the Program in order to help maintain their enthusiasm and commitment to it. It is quite evident that Prof. Long in engineering and the German Section as a whole are investing a substantial amount of their professional and personal time and energies to make the Program a success. The achievements of the Program thus far are very much a testament to these efforts and dedication.

Thoughts on Ways to Address Concerns of Eurotech Students about the Program

In fact, there seem to be no major problems currently inherent within the Eurotech Program. This likely reflects both its careful planning and implementation and faculty responsiveness to issues that have arisen during the Program's initial three years. Student evaluations do suggest that it might be useful to try to schedule something like a weekly or bi-weekly, informal German language "Tisch" during the lunch hour where Eurotech students could meet and use their German in an informal setting. There is expressed desire for this or related types of social/educational events, although there are even stronger indications that, in fact, students feel as though they probably in the end have too little time to dedicate to such activities. In order to offer such an opportunity to those who can regularly or occasionally find time, it might be useful to consider hosting joint events for Eurotech and LTL (Linkage Through Language) students as well as German-speaking faculty on a regular, if infrequent, basis. One formula might be a standing monthly time/date for a "Kaffeestunde" (such as those held during academic years 1994-96) in combination with a once monthly "Mittagstisch", either in a university classroom or a cafeteria. A different or additional gathering type might be twice or thrice annual Eurotech meetings/receptions one of which could serve, for example, as an annual introduction of new students, faculty, courses, and internships, and another of which could serve as something like an awards ceremony to recognize students who have completed notable segments of the Program (e.g., B.S. and Eurotech degree requirements, an internship abroad, etc.). Such functions might be helpful so that students and faculty can meet and informally signal their collective dedication to the Program and conduct some low-key question-answer and advising activities associated with it.

In addition, it appears that there is a continuing need to educate engineering faculty about the Eurotech Program and cultivate their support for marketing the Program and encouraging students already in the Program: Leaders of Eurotech seem well aware of this continuing need and indicate that engaging engineering faculty in the Program is and will remain a part of their broader efforts to develop the Program.

The major challenges and potential problems facing the Program actually seem to largely emanate from external forces, over which the Program may have only limited influence. Faculty and students express a bit of frustration with the now relatively modest Eurotech enrollment figures. With no comparison at hand, this reviewer cannot pass judgement on what optimal enrollment figures might be for such a program. However, clearly the participants would like to see more people involved, and there are at least a couple of external factors that make this an on-going challenge. Relatively few students are taking languages or partaking of study abroad opportunities at the university, and an apparently high percentage of engineering students find the combined engineering/Eurotech program to be quite demanding for them. In addition, although Eurotech continues to enroll about ten percent of all incoming engineering students, the number of applicants and enrolled students in engineering at the University of Connecticut has dropped during the Program's first years. Under these conditions the Program will likely be faced for at least the next few years with a challenge in enrolling and then graduating very large numbers of students. As noted above, this effort may be helped somewhat by the past success of the Program and a positive feedback effect that may encourage more students to enroll. Evidence of such an impact would, presumably, become evident sometime during the next couple of years as Eurotech's first students return from internships in Germany, graduate, and receive their first job offers. It should be noted that the Eurotech leadership has taken some steps within their power to attract students, and more generally, to inform a wider audience about the existence of and activities within the Program by inaugurating a bi-lingual homepage (with 500 "hits" since its inception) and by publishing the first in an on-going series of newsletters.

Another challenge for the Program will be to compete for resources within the university during a time of low and still declining state operating support for public higher education in Connecticut. Leaders within the Program are currently engaged in this effort as well as related efforts to secure external support. In addition to the many other efforts and tasks being undertaken by Eurotech leaders, this one seems to be an especially draining and demoralizing one, given the Program's success thus far both in the classroom and in securing substantial external support from highly competitive and prestigious sources. It seems likely, however, that the Program will need to both continue to be successful in acquiring external funds and to be successful in competing for funds from the shrinking university operating budget.

The ironic, final, conclusion that this evaluation might make is that the University of Connecticut's Eurotech Program has achieved notable success during its formative years, but that its future is somewhat imperiled, not by lack of opportunity or shortage of dedication on the part of the Program's principals, but by the potentially harmful impact of university budget cutting and *de facto* budget reallocations away from classroom instruction, with a potentially seriously negative impact on the resources for and morale within the Eurotech Program.

Eurotech and related German language endeavors are highly regarded by European Studies faculty and others at the University of Connecticut. Eurotech and other German language programs at the university have a leadership position within U.S. higher education and offer a potential mechanism for responding to both undeveloped language skills among students generally and to the increasing need for these skills among professional specialists. Eurotech has justifiably earned a respected position on our campus. One can only hope that this successful, pioneering endeavor will be able to sustain itself over the long-term despite somewhat threatening external conditions.

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Education

Ph.D., Ohio State University, Geography, 1976; M.A., Ohio State University, Geography, 1972; A.B., Dartmouth College (cum laude), Major in Geography (Honors), Minor in Economics. Functional fluency in German achieved through years of formal and informal study and use of the language.

Academic and Professional Positions Held

Professor, The University of Connecticut, 1991- present
Director, Center for European Studies, The University of Connecticut, 1992-1996
Associate Professor (tenured), The University of Connecticut, 1986-1991
Associate Professor (tenured), The University of Georgia, 1982-1986
Assistant Professor, The University of Georgia, 1976-1982
Visiting Professor at Canadian, Estonian, Austrian, and German universities
Vice Chair/Chair, AAG Soviet and East European Specialty Group 1986-1988; Chair of the International Research and Scholarly Exchanges Committee of the AAG, 1989-1993; Vice-Chair of the European Specialty Group of the AAG, 1993-present.

Teaching Specializations

Geography of Europe, Economic Geography, Regional Development in Europe and the USA. Participant in a program (LTL) to bring German language instruction into social science courses.

Research

Over 40 published papers in social science journals and edited books on aspects of regional development in Europe (esp. the GDR), the USSR, and USA. Selected recent publications:

1991 W.H. Berentsen, "Eastern Europe in 1990: Politics, Policy, Performance, and Patterns in Space". In: Eastern Europe: The Impact of Geographic Forces on a Strategic Region (Washington, D.C.: Directorate of Intelligence), pp. 15-30.

1992 W.H. Berentsen, guest editor, Tijdschrift voor Economische en Sociale Geografie, Vol. 83, No. 5, "Regional Problems and Regional Planning in Central and Eastern Europe".

1994 W.H. Berentsen, "Implications of German Unification for Regional Development in the former GDR", Local Governments and Market Decentralization: Experiences in Industrialized, Developing, and Former Eastern Bloc Countries, R.J. Bennett, ed., U.N. Univ. Press, pp. 476-504.

1996 Eike W. Schamp and W.H. Berentsen (co-editors of special issue), "Institutions in Industrial Transition of Central and Eastern Europe", forthcoming in Geographische Zeitschrift.

1997 W.H. Berentsen (ed.), Contemporary Europe: A Geography [textbook] John Wiley & Sons, Inc., forthcoming in January.

Numerous research grants and fellowships for work (including many invited lectures in English and German) in the USA, Austria, Germany and the German Democratic Republic, Bulgaria, Hungary, and Estonia, including funding from NSF, SSRC, IREX, USIA, and the Woodrow Wilson Center for International Scholars. Most recent grants: 1994-97, PI for USIA grant for exchange of faculty between the U. of Connecticut and the Tartu University, Estonia ($100,620); 1995, Fulbright fellowship to teach and undertake research at Humboldt Universität, Berlin.